

EDITORIAL

The task of those responsible for prevention of crime in a country like India is highly complicated in view of the complexity of Indian society as well as India's colonial history. The social, cultural, religious and ethnic diversity of India is much more than that of the European Union which comprises of many independent countries. The Indian Constitution recognizes 23 official languages as against only 20 official languages of European Union. This does not include the 1683 "Mother tongues" and 387 living languages of India, according to one encyclopedia.

Such complexity gives rise to difference in perception of what amounts to a crime. Indian laws as well as its legal system reflect the norms and values suitable for functioning of a democratic society based on concepts like equality, objectivity and rule of law. However, these norms and values are neither fully understood nor shared by the myriad social groups that constitute the larger society. Cultural variations of almost every aspect of life are more prominent as one goes from one geographical area to another and from one community to another. According to propounders of Culture Conflict Theory, various sections of population can come in conflict with the legal definition of approved behaviour both intentionally as well as accidentally because the legal definitions mainly reflect the norms of the dominant social group. According to Culture Conflict Theory, "primary conflict occurs when an individual's behaviour is governed by two different cultures". In a country like ours, an individual is often subjected to more than one set of norms because he or she has to abide by the norms and values of caste, community or religion in addition to those prescribed by law. Practices like Sati, child marriage etc., are examples of such conflicting normative expectations from an individual.

Existence of competing normative structures in Third world or in erstwhile colonies can be traced to their colonial past, according to thinkers like Midgal. According to their understanding, social control is not monopolized by the state as in the case of developed countries. In the erstwhile colonies various social organisations like tribes, castes, religion

sects etc., compete with state in exercising control over the individual. Sociologists like Kuppaswamy have pointed out that in India, democracy, socialism and secularism are preached while hierarchy, inequality, emotionalism and particularism which belong to feudal social structures are extensively practiced within the family and in different segments of society.

The reasons for this fragmented social control in the so called Third World countries can be traced to their colonial past. The imperial rulers destroyed the old social and political arrangements soon after they colonized these areas. However, they preferred to rule through local middle men leaving the social control fragmented and localized rather than establishing a centralized social control. For example in British periods a large number of small kingdoms were allowed to have their independent systems as long as their allegiance to British Empire was assured. Even within the British ruled areas, serious attempts were not made to reform the social institutions which were directly in conflict with rational legal system based on equality. After the Mutiny of 1857, British Rule in India clearly confirmed Midgal's description of fragmented social control adopted by imperial powers.

Such cultural conflict due to fragmented social control over a long period is likely to be reduced by migration and mobility necessitated by modern economy. However, it will take a long time to fully fructify. Meanwhile, even within the urban centres, which are the normal destinations of migration and mobility, the various segments of population are likely to experience degrees of cultural conflict.

Theorists like Durkhiem, Hirsche who believed in social control theory gave importance to individual's degree of attachment to the society and family members, involvement in social activities and stake in the society in explaining normative behaviour. They also gave importance to the belief of the individuals in the society's rules as being fair. Therefore, in a situation of social conflict the individual is less likely to comply with legal provisions about which he has conflict at cultural level.

Theorists like Minor who have integrated the Theory of Deterrence based on rational

behaviour, and Theory of Social Control for explaining deterrent behaviour, have given importance to both belief in the legal system as well as fear in breaking of law as important contributing factor for deterring an individual from committing crime. Cultural conflict at one hand decreases the belief of an individual in the law, while on the other hand, it can reduce his or her fear for breaking the law mainly because of ignorance of what amounts to the legal definition of an offence. A recent study by an officer, Rina Mitra, studying in National Defence college, which she has done with the help of NICFS, has revealed how culture conflict is prevalent among different sections of Delhi's population depending on their level of urbanization and level of education. The respondents often failed to recognize sets of incidents as amounting to rape, though as per legal definition each of the cases qualified to be that of rape.

The role of education, which has been brought out by this study, clearly shows that education helps in decreasing culture conflict and deviant behaviour, thereby, contributing to the prevention of various offences.



(D. M. MITRA)

IMPROVEMENT OF CRIMINAL JUSTICE ADMINISTRATION TO ALLEVIATE POVERTY IN INDIA

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The linkage between crime and poverty in some form or the other is a well-established phenomenon, which is aptly recognized both by academicians and practitioners (Sangal. 2003). The prevalence of poverty and its consequential fallout on the commission of crime of diverse types in combination with wide spread corruption with its multidimensional forms and magnitude has become a matter of great concern for many countries in the world. The most dangerous consequence of this state of affairs is that it is affecting and diluting the efficacy of the Criminal Justice System, which is the main backbone of any country, for providing peace, tranquility and justice to the people living there in.

India is an ancient civilization with a proud history. It is also one of the world's most populous countries. However, the disparity among citizens in economic status is too much marked. Since Independence, the country has been consciously making efforts to uplift the poor and integrate them into the main stream. In fact, this has been a recurrent theme of India's Five Year Plans. As a poverty reduction strategy, the plan has two main thrust areas. One calls for the greater investment in infrastructure, both public and private, restoration of physical balance and continued liberalization especially in agriculture, foreign trade and financial market. The second thrust area relates to providing of basic minimum services such as education and health, generation of productive employment, and removal of regional imbalance.

While a lot has been achieved, in the poverty reduction programmes, there is still much more to be done. Concerted efforts are required to lift more than 300 million poor from their present economic status to above poverty line. Certain indicators of poverty are globally common. Some of them are malnutrition, poor health, lack of learning opportunity and limited choices. In fact, the cost of treatment for a general ailment itself keeps a poor person in perpetual ill health and may push him to a vicious circle of poverty. In India, we continue to have the problem of child labor. Parents in the poor families who are unable to bear the cost of upbringing their children; send them for work and not to school, to make them additional hands for increasing the total earning of the family. Deprived of the education, these child laborers grow up to become a poor, uneducated and sickly citizen (Prasad Sharda 2003).

While Article 14 of the Constitution of India guarantees equality before law, the ground situation is that the poor finds it difficult to extract this equality from the clutches of the powerful. The poor because of their ignorance and weak economic condition become easy target for the exploitation by criminal elements as well as by the mafia of diverse nature. The poor get sucked into the pot of criminalization and graduate in the profession of crime to become hardened criminals. Of course it is true that while the poverty does provide an ideal ground for criminality to thrive, it is not necessary that all poor persons will become criminal.

Part of the blame for the present Criminal Justice System not being poor friendly must go to the adversarial mode of common law. It is cumbersome, it is expensive and it is terribly time consuming. While a poor person will find difficult to arrange for bail and languish in the prison, the rich will employ all possible means to avoid arrest and going to jail. In case, the poor person in jail is the only bread earner in the family, his being incarcerated would extinguish the source of livelihood for the entire family. This will further push the family into the deeper debts of the ocean of poverty (Gaur .K .D 2003).

The malaise of debt also acts very harshly on the poor. While the rich have institutional arrangement for borrowing funds at nominal interest rates, the poor have only to fall back on the local moneylender. Trapped in the vicious cycle of payment of installments of inflated interest and principal, the poor gets poorer. To repay the debt

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some times, they are forced to sell their cultivable lands and migrate to the urban areas as homeless and landless laborer. In the town, they are ready material for the criminal gangs to pounce upon them and convert them as pawns on the chessboard of the underworld. The social practices in India like dowry and ostentatious dinners on the occasion of birth and death also make the poor people poorer. Unable to arrange for the dowry, the girls are married to fake bridegroom, who are actually agents of prostitution racketeers. Many young girls themselves fall into the prostitution racket unknowingly and involuntarily due to ignorance and poverty of the family (Guar KD 2003). A large number of marginal crimes such a petty theft, bag lifting, chain snatching, and shoplifting are perpetrated by such poverty stricken people to in order to fulfill their basic needs. In jails also these people constitute the majority.

As per the Annual Review 2006 , the Tihar jail in the Capital City of Delhi itself houses more than 13,000 prisoners(Annual Review Of Tihar 2006). Most of them are fit for useful work at the time they entered the jail. They were most likely the sole bread earners for their families. In our anxiety to keep them away from opportunity of committing more crime and perhaps armed with some ill planned reformative schemes, they are put behind the bars. But that deprives the society from their usefulness as contributors to the national income. Examining the same issue at the micro level, it has been observed that their families get poorer and some times they are forced to take costly loans to take their sole bread earners out of prison. The children of such prisoners are more likely to become vagrants and petty offenders. This is an area where serious thinking is required.

Criminal Justice System and the Plight of Poor Victims and Accused

The criminal justice system in India follows the Adversarial model of common- law .It is very cumbersome, expensive and cumulatively disastrous. The poor cannot easily reach the temple of justice because of the heavy cost of its process and the mystique of legal ethos. The system itself has become instrumental in many situations where poor persons have been victimized in myriad forms.

Abuse of Power Against Poor by Law Enforcement Agencies

Section 156 of Cr.P.C empowers any police officer in charge of a police station to investigate a cognizable case, without the order of a Magistrate. Officer in-charge of a police station may depute one of his subordinate officer not below such rank as the State Government may by general or special order permit to investigate the facts and circumstances under Section 157 of Cr.P.C. In practice, officer-in-charge of a police station, sub-Inspector of police and assistant sub –Inspector of police have been conducting investigation in a criminal case depending on the availability of man power and the gravity of offence in different States. Some time due to lack of manpower, even the Head Constables also investigate a criminal case. It has been observed that investigating officers remain overburdened with work. Number of investigating officers has not been increased. As a result, pendency of cases in police station has been increasing day by day. It is found that many a time, poor and innocent persons are picked up by the police without prior investigation. After the arrest, cause of acquisition is not explained to them many times. They remain in jail for unlimited period, as the investigation remains incomplete. In Jagannathan Vs. State (1983, Cr.LJ pp-1748), a poor villager was arrested by police and had to face the trial proceedings in the court of law. He had to incur lots of expenditure for attending the court of the Magistrate during the trial. Payment of fees to a lawyer was also very difficult for him. The offence was not very serious also Examples of hundreds of cases of this nature may be cited to show how a poor man suffers economically in the process of struggling for justice.

Legal Aid and the Poor Accused

Article 39A of the Constitution of India directs the State to 'provide for free legal aid to ensure that opportunities for securing justice are not denied to any citizen by reason of economic or other disabilities. Legal services Authorities Act 1978 provides that poor people should be provided free legal aid on behalf of the State. This has been reinforced by the decision of the Supreme Court in cases of Hussainara Khatoon V. State of Bihar (1980 ;1 SCC 81), M H Hoskot V State of Maharastra (AIR 1978 SC 1548) and many others. It is the duty of the presiding judge to ensure that no one goes undefended during trial. Hence, the responsibility lies with the Government to create Legal Aid Cells in all the districts. In fact, a large number of incompetent

Lawyers are allegedly appointed by Legal Aid Board on political consideration. They are not fully competent to fight the case properly. As a result, poor accused has to engage a lawyer to fight his/her case on personal expenses. Fees of a good lawyers are very high. A poor accused has either to sell his property or borrow money from others to incur court expenditure. In the long process of criminal trial a poor accused becomes almost a destitute.

Bail Provisions and the Poor Accused;

Section 436 of the Cr.P.C. guarantees the right to bail to an arrestee in the bailable offence with or without surety on executing a bond. Section 437 of the Code states that the release of an arrestee who has committed a non-bailable offence, is a matter of judicial discretion. Clause (i) & (ii) of the Section 437 Cr.P.C. prohibit bail to an accused who has committed a non-bailable offence punishable with death or life imprisonment. But, a person below sixteen years of age, women, sick, or infirm person could be released on bail even if she/has committed a non-bailable offence punishable with death or life imprisonment (Proviso of Section 437). Sub-clause (6) of section 437 further, provides if in a case triable by Magistrate, the trial of an accused of any non-bailable offence is not concluded within a period of sixty days from the first date fixed for taking evidence in the case, the accused will be released on bail. Section 438 empowers the High Court or the Court of Session to grant anticipatory bail to an accused apprehending arrest on an alleged accusation of a non-bailable offence. Section 440 of the Cr.P.C. provides that the amount of every bail bond executed shall be fixed with due regard and shall not be excessive. Section 441 of the Code further clarifies that before any person is released on his own bond, a bond for such some of money as the police officer or court thinks sufficient shall be executed by the accused. Provisions for the release on bail are quite cumbersome and beyond the reach of a poor man. It is not always possible for a poor man to arrange surety or to execute monetary bond to get himself released. Basic principle behind granting bail to an accused is to ensure his presence in the court during trial. Many poor accused could not get out of jail after obtaining order for granting bail due to their inability to arrange security.

In *Moti Ram vs. State of M.P.* (1978 Cr.LJ 1703 SC) a poor accused had obtained an order for being granted a bail, but the Magistrate concerned insisted him to produce a surety for a sum of Rs. 10,000/- before issuing the bail order, which the accused could not arrange due to his poverty and he could not get the bail. Subsequently, the Supreme Court of India held that the prerequisite of a surety of Rs. 10,000/- fixed by the Magistrate for the grant of bail amounted to denial of the right to bail to the poor accused.

Further, Justice Bhagwati in *Hussainara Khaton's case* (1979 Cr.L.J. 1936 S.C.) laid down that the poor finds it difficult to furnish bail even without sureties because very often the amount of the bail fixed by the courts is so unrealistically excessive that poor persons are unable to satisfy the Police or the Magistrate about their solvency for the amount of the bail. Where the bail is with sureties, it becomes an almost impossible task for the poor to find persons sufficiently solvent to stand as sureties. As a result, either they have to take the help of professional sureties, touts et or to incur debts for securing their release. In this context, the Supreme Court held that unreasonable pre-trial detention, of an accused is the violation of Article 21 of the Constitution of India and had laid down that the if accused is known to the community he should be released on personal bond with or without monetary consideration.

Abuse of executive's discretionary powers and poor people;

It has been observed that people in authority have misused schemes sponsored by the Government for the poor people. In common cause, a *Registered Society (1) Case* (1996); 6 SCC-243, the Supreme Court of India held the Minister personally liable for the criminal breach of trust for allotting petrol pumps and gas agencies arbitrarily without even inviting formal tenders. The Court observed that the Minister is in a position of a trustee in respect of public property in his charge and imposed an exemplary fine of Rs. 50 lakh on Captain Satish Sharma, Former Petroleum Minister in the P.V. Narasimha Rao's Government for arbitrary exercise of discretionary power of Minister in allotting Petrol pumps and cooking gas agencies and ordered the Central Bureau of Investigation to probe into the allotment scam and institute criminal proceedings for committing breach of trust against him for the abuse of office during his tenure as a Minister.

The judgment was an eye opener for those who abuse discretionary power. But again in common cause; a Registered Society Vs. Union of India II (AIR 1999 SC-2979) a three member bench of the Supreme Court consisting of Justices Saghir Ahmed, Venkataswami and Rejendera Babu on August 3, 1999 turned down its earlier decision of No. 4 1996 and ordered refund of the sum of Rs.50 lakh to the petitioner and quashed the order of the court for launching prosecution proceedings against Cap. Sharma for Breach of trust under Section 406 IPC.

It is, therefore, felt that judgment of common cause in 1999 may be reconsidered to save poor people from getting into the clutches of poverty again and again. The trusts of Govt. schemes should be percolated down to them fairly.

The State is one of the biggest investors in the national economy. The purpose of undertaking and guiding investment activities is to generate economy, employment, development of infrastructure, all of which help in, the alleviation of poverty. The series of five years plans were designed to build up economic base in areas where private investment feared to tread. But the experience had been reverse. It was acknowledged by one of the Prime Minister of the Country that out of 100 paisa only 20 reached the people(Sangal 2003). It was an indictment on the system itself and exposed the flaws therein. The huge disparity between input and output was due to large scale defalcation of funds, frauds, scams, and corruption of the bureaucrats. It is recently reported that 'Rupees 5 lakh crores are stashed in Swiss Banks' (Today Afternoon 6 Jan. 2007, New Delhi).

Lack of Proper Implementation of Laws

'The rule of law is essential to equitable economic development and sustainable poverty reduction. Weak legal and judicial systems undermine the fight against poverty on many fronts: they divert investment to markets with more predictable rule-based environments, deprive important sectors of the use of productive assets, and mute the voice of the citizens in the decision making process. Vulnerable individuals, including women and children, are unprotected from violence and other forms of abuse that exacerbate economic inequalities. Ineffective enforcement of laws leads to corruption, money laundering, and other problems that burden people and economies around the world.' (the World Bank Annual Report 2002; p. 77).

The criminal justice system has, therefore, a vital role to play in strictly enforcing laws that are intended to strengthen the images of the State, preventing leakages and misappropriation of funds that cause havoc in the stock markets leading to a holocaust of misery for a large number of investors and establishing industries that generate employment for the poor.

Benefit of Lok Adalats to Poor, Myth or Reality;

Legal services Authorities Act, 1978 provides for the establishment of Lok Adalats (People's Court) for quick and cheap Justice. But, Lok Adalats have become more of a source publicity rather than a source of resolving the disputes. Generally, Lok Adalats are organized on weekends and public holidays. Number of cases are disposed of in one day. At present, Lok Adalats entertain only those cases where the parties to the case make a joint application to the court or tribunal showing their intention for settlement/compromise. Scope of Lok Adalats should be increased and in this regard suitable amendment should be made under relevant legislation so that poor persons get easy access to them.

Compensation/Reparation to the Poor Victim of Crime;

Sections 357 to 359 of Cr.P.C empower the Criminal Court to order for the payment of compensation to the victims of crime out of the fine imposed by the court. The amount of fine is limited to the amount of fine imposed and can be ordered only, if the accused is convicted. This amount of fine is very meager to help the poor victim. There is no separate provision for reparation of crime victim in India. Payment of compensation to a victim of crime is again very difficult due to procedural technicalities. However, in recent years, the Supreme Court of India in certain cases like, Neelbati Behra vs State of Orissa (1043 ;2 SCC 646) granted compensation to the poor victims of illegal detention at the hands of executive and death caused due to police atrocities. In Nilabati Behra Vs. State of Orissa (1943) 2 SCC 646) deceased's mother was granted interim compensation from the Hon'ble

Supreme Court of India with the direction that the amount of interim compensation paid to the deceased's mother will be adjusted when the final compensation will be granted by the competent court. In *Sarup Singh Vs State of Haryana* (1995 Cr.L.J. 4168) the apex court awarded Rs.20,000/- compensation to the widow of the deceased and reduced the sentence of seven years to one year of imprisonment.

However it is difficult for a poor victim to approach the highest Court for such type of remedy due to lack of resources. Even if he approaches to the court in the process, a poor victim would be poorer by incurring higher expenditure of judicial process including the payment of a heavy fee to the lawyers.

The Role of Criminal Justice System

Protecting the Rights of the Poor

The Constitution of India envisaged a new social order by doing away social and financial inequalities through a policy of compensatory discrimination and a series of schemes as part of the five-year plans. Most of these are encapsulated in legislation inspired by the Directive Principles of the State Policy. It pertains to abolition of untouchability and bonded labor, protection of civil rights, land reforms, equal wages, rights of women, in other words, all forms of inequalities and discriminations, and inequities. There are two specific fundamental rights, one, right against exploitation (Art 23), and the other prohibition of employment of children below fourteen years in any factory, mine, or hazardous employment (Art 24).

It is the duty of the system to protect the rights of the poor by judiciously applying and implementing these laws in particular and others in general. The system must proactively help the poor to get their rights by initiating suo moto action wherever such instances of deprivation, exploitation, or denial come to their notice as the poor are often not able to assert for the want of resources, knowledge, skills, and confidence.

Increasing Access to the System

Every citizen has a right to be heard, and the poor more so because the rich have alternatives which the poor are deprived of. The right is implicit in law, often not acknowledged, adhered and respected (Radical Humanist). The law enforcement officer exercises his discretion, often against the poor, for the sake of minimization of crime or burking it for fear that the crime graph may go upwards. It has to be realized that the process of law does not start its operation unless the person is heard, information is registered, and investigation is taken up. Similarly, the plight of the poor man gets compounded if he is under trial and languishing in jail, or a victim of crime, or a witness in a case if the trial is adjourned.

So whether it is at the initial stage or the trial, the system can help the poor by alleviating the misery that is not only physical but financial and psychological also. A genuine listening of the petitioner, irrespective of the crime figures and early completion of processes in judicial hearings are within the competence of the system to deliver. It has to be innovative to do so. Crime must never be made a political weapon and an issue for elections. It is this aspect, which pressurizes police which is too weak to resist due to considerations at the top and crucial positions of office and permits compromise with law at the cost of the poor victims. The invention of public interest litigation has been an important contribution in increasing the access of the system to the poor.

Reducing Impact of the System

The system is beset by apathy, indifference, corruption, and delays. It has therefore, to deal with the negativities manifest in the process of investigation, arrest, bail, delay, use of handcuffs, solitary confinement, illegal detention, lack of legal aid, etc. Most of these decisions are going by default regarding implementation for want of a remedy. It is necessary that most of these are incorporated in basic law in order to ensure their compliance. A new section for the review of cases of under trial prisoners has been made in the Delhi Prison Act so as to deal with the problem of delay in trial. There is a similar need for other stipulations to find inroads into law. Till then the senior officers and superior courts have to ensure that the decisions are acted upon both in letter and spirit. It may also be considered whether the benefits of the Probation of Offenders Act are as much available to the poor as to the rich.

Humanizing the Law Enforcement

The Criminal Justice System, besides the executive (police, prosecution, and rehabilitation services, and other agencies of law enforcement like the income Tax, Customs, Excise, Drug Enforcement, Motor Vehicles department, Municipalities, etc.) and the judiciary, also includes the legislative wing which has the power to make laws. It must be intention of all law-maker to consider the impact of the proposed legislation on the poor. But that often does not happen.

Two laws are stated as examples. The first one pertains to forests. The law is highly iniquitous to the tribals in the forest areas who have been deprived of their land, livelihood, and culture. They have been dispossessed of land without the compensatory schemes of rehabilitation. This has given rise to tensions. The second is the Motor Vehicles Act wherein a poor driver has to undergo hardship in securing a driving license or its renewal, which forms the basis of his livelihood. In the procedures, there is more emphasis on the peripherals than the skills of driving. One has to see the extent of window dressing and the proliferation of informal support and intermediaries to appreciate the hardship.

In their anxiety to make a perfect law, the framers forget the ground realities. The share of workers in unorganized and informal sectors of economy was 37% in 2000, and is likely to rise to 55% in 2011 and 66% in 2021 (India 2003). This is generally beyond the purview of law. In a poor society, vendors, street children, rickshaw pullers, cart carriers, water trollies, etc. cannot be wished away. Recently, Delhi Police, following the recommendations of the National Task Force on Vendors, has directed motorists, "on pain of paying hefty monetary fines, not to buy anything or give alms to beggars at traffic junctions" (The Times of India). This notification affects child vendors who make an honest living by providing services which people need like newspapers, napkins, balloons, groundnuts, trinkets, etc. Similarly, implementation of anti-begging law is a frustrating experience as there is no proper support system in the form of beggar homes.

The Supreme Court in Olga Tellis judgment has upheld the right to livelihood. Hence to delegitimize activities without any thought of their impact upon the poor would be disastrous for them. Either the visionary laws be withdrawn or clauses added there to provide for accommodation in implementation, at the same time ensuring that this leeway is not exploited by those exercising discretion. Such an accommodation is to be transparent and definitive, and not vague.

Reducing the Gap between Promise and Performance

There have been legitimate areas wherein the judiciary has intervened for a cause. India, which has been claiming surplus agricultural produce, has the very irony of starvation deaths. This may be due to lack of coordination between the central government and the States, and the faulty distribution system when the stocks in the FCI godowns are permitted to rot and eaten by the rodents. It is tragic. Hence the Supreme Court, on a petition by an NGO, has directed that the Chief Secretary shall be personally held responsible for any starvation death in the state.

For reducing poverty, 'safety nets are needed to protect the most vulnerable groups: the unemployed, the disabled, the aged, and (often) women, who lack access to public programmes that are tied to employment; and the poor who suffer most when the times are hard' (World Development Report 1991; p. 64-65). This can be ensured by a vigilant system that does not permit the frustration of the positive measures for which the system may have to innovative without trading upon the details of the executive action.

Another important aspect is filling the gap between the promise of decisions made by the Supreme Court and the performance of the system. In spite of the constitution mandate that decisions of the Supreme Court shall be binding on all courts, there are still violations of the directives on arrest, bail, use of handcuffs, delay in proceedings, under trial prisoners awaiting their trials. The poor do not have any remedy as the process of contempt is very cumbersome and they do not have the wherewithal to approach the apex court. Hence, there is a need for integrating these stipulations in the body of law which can then provide for immediate remedies. Taking cognizance of the plight of the under trial prisoners, the Delhi Prison Act provides for one section that makes it

mandatory to review the cases of such persons. Similarly, the stipulations of the ruling on arrest (Joginder Kumar) need to be incorporated as amendment in law.

Rehabilitation of Poor Criminals

The components, which are closest to this objective, are the prison administration and the -social welfare department, which runs various institutions for juveniles and women in conflict with law or seeking its support. Since a new orientation was given by prison reformers to prison administration, there have been numerous useful initiatives all over the country. In providing projects within the prison walls for empowering the inmates by teaching them skills, competencies in computer education (Hindustan Times 2003), improving their academic record through correspondence courses of established universities. This is in tune with the empowerment thesis of Amratya Sen. Whereas it would not be desirable to reserve jobs for this category of people, it is likely to go a long way in helping the inmates rehabilitate when they come out and start life afresh. Such initiatives require support of the government in general and the system in particular. An evaluation of the role of the probationary officers in this regard may also be made so that they too can use their potential for this laudable cause. Their functioning need not only be confined to the operation of the Probation of Offenders Act but should also be extended to incorporate the spirit of legislation so as to prevent recidivism.

Recommendations

- General attitude of the society towards poverty and poor needs thorough re-examination and through well designed and planned programmes, the Criminal Justice Administration has to appropriately change its policy to protect the interest of the poor and the indigent, who come in its contact.
- Such endeavor could be sought through decriminalization of many offences crime and petty offences, re-criminalizing behaviors that impair a poor man's ability to earn his livelihood, and by reconstructing the image of the poor and resource less, to the society in general and the Criminal Justice System, in particular.
- The rights of the poor should be protected by judicious application and implementation of laws. The Criminal Justice System must proactively help the poor to get their rights by initiating Suo-moto action wherever such instances of deprivation, exploitation or denial come to the notice of the court, since the poor are not able to assert themselves to get justice for want of resources, knowledge and support.
- Conviction rate particularly related to socio-economic crime should increase because it is the rich and the influential who generally perpetrate this crime and earn enormous wealth to create a misbalance in the national economy.
- Independent anti-corruption units should be established in every department dealing with public and the appointment of ombudsmen at all levels should be made compulsory.
- There is a need for efficiently monitoring and filing of corruption cases by an honest and accountable bureaucracy which can fight against corruption.
- The provision of Probation of Offender's Act should be increasingly applied to poor and indigent offenders so that they are saved from unnecessary imprisonment, which would impair the prospect of their rehabilitation.
- Capacity building of Criminal Justice Functionaries should be encouraged by both ways i.e. in terms of providing necessary infrastructure, allocating greater funds and by developing their skills to make them capable of facing the challenges emerging due to changing trend of crime and to protect the poor from indulging into it.
- Reformation programmes for the prisoners should be directly linked with his/her economic condition, so that through those programmes he/she can learn some useful trades and gain some skills which would help him to lead a productive and useful human being after his/her release from the jails.
- Provisions of compensation should be incorporated in Criminal Law by amendment. Amount of compensation should be calculated on the basis of lost/injury suffered by victim. Payment of compensation to the poor

victim should be ensured by sentencing judge. Guidelines laid down by the Supreme Court of India in various cases should be followed. Interim payment of compensation to the poor victim can be helpful in this rehabilitation.

- Public interest litigation should be encouraged to help poor accused. Apex Court should instruct executives in public interest litigation to take preventive and punitive measures to redress the grievance of the poor and uplift the plight of the weaker.
- Transparency in the functioning of the Criminal Justice System needs to be upheld at every stages in the Criminal Justice Processes. This would undoubtedly secure the rights of the poor and would reduce the differential treatment given to them especially in matters of arrests and granting bail.
- Appropriate measures to be undertaken by the Criminal Justice System which would enhance the efficiency and reliability of cases involving the poor and the resource less through free legal aids and by widening the jurisdiction of Lok Adalats for providing justice to poor at the minimal cost.
- Myths and prejudices of the Criminal Justice Functionaries towards the poor should be done away with by developing such curricula in the training programmes which would help them in changing their attitudes toward poor and the needy. This would also help to ensure impartial processing of the cases of poor offenders in the Criminal Justice Processes. Police should adopt a proactive approach towards the plight of the poor. Police should be poor-friendly to enable the criminal justice system to give justice to the poor in an amicable manner. For that sensitization programmes needs to be organized at various levels, particularly at the grass roots level of the police.
- There is an urgent need for restructuring the criminal justice system, re-orienting the social perspectives of justices and re-vitalizing the prosecution machinery to alleviate poverty. At the same time the law should be made more humane, it should exhibit concern for the welfare of the poor and the weak.

Conclusion

It may be safe to conclude that (a) the poor are not criminals, (b) all criminals are not poor, (c) rich nations are not free from crime nor are poor nations are infested by it, and (d) the poor in general require the support of the system for the alleviation of poverty not for are sake of prevention of crime but in the interest of improving their conditions and taking them out of the abyss of helplessness, penury, and desperation. The system has a potential which has remained hidden so far. It is time to acknowledge and assert the role at all levels and drive maximum advantages of the great energy of the system.

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RIGHTS OF WOMEN PRISONERS IN INDIA : A LEGAL ANALYSIS

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ABSTRACT

Indian constitution under Article 21 and 22 protects and safeguards the rights of convicts, under trials and offenders. The present analysis tries to find out different types of safeguards guaranteed to the prisoners along with a special attempt to search for the particular safeguards for the women offenders. In this study an attempt is made to bring out the various facets of right to life in the arena of prison rights guaranteed to the convicts. This analysis is divided into two parts: in the first part, different types of prison rights guaranteed under the Indian constitution under Article 21 are highlighted. In the second part an effort is made to find out the present day situation of the women offenders in the jail and then some suggestions are highlighted to improve the position. Unfortunately, for long, there had been no reported case law regarding the treatments meted out to the women offenders in Indian jails, neither any in depth analysis has been made about the safeguards guaranteed to them and their children. This study is a doctrinal research analysis of case laws which tries to look at the concept of right to life under the Indian constitution from the aspect of prison rights and tries to find out special rights if any guaranteed to the women offenders in India.

Key words: Prisoner Rights; Women Prisoners; Legal analysis; Constitutional Safeguards

Introduction

Other than the basic human needs, which have now been included in the arena of right to life under the Indian constitution due to the brilliant humanistic judgments of the Supreme Court, right to life also enables a person to avail the guarantee of protection in cases of criminal justice administration. The said humanistic approach has not stopped to the basic necessities of life like right to live with dignity, right to education, health, labour welfare etc, but it has also highlighted the other essential rights to live a dignified human life. The right to life includes the right to justice which includes fair trial. The human rights afforded to an individual are not a favour done to him but a matter of norm accepted in a civil society (Verma, 2004).

Under our constitution deprivation of personal liberty as penal policy is purposive because the imprisonment of criminal as sanctioned is a measure of social defense and individual rehabilitation. The focus of interesting penology is the individual and the goal is salvaging him for society (Sirohi, 2004). This study orbits around prison rights for women convicts, under trials and offenders in the arena of right to life.

Guaranteed rights for the prisoners in India

The fundamental right to live a dignified secured life in India is guaranteed by Art 21, which is the corner stone of this study and which says that “no person shall be deprived of his life and liberty except according to procedure established by law”. Art 21 and Art 22 of the Indian constitution indicate six types of rights guaranteed to the

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prisoners as a whole. These are briefly discussed below:

1. Convict's rights

*In D. Bhuvan Mohan Patnaik v. State of AP*¹, it has been held that even convicts are entitled to the precious right guaranteed by Article 21. They shall not be deprived of life and personal liberty except according to the procedure established by law. The Government cannot resort to oppressive measures to curb the political beliefs of a convict. However, they have no fundamental right to escape from lawful custody. Hence, posting of police guards outside jails and installation of high voltage live-wire on jail walls are not violative of Article 21.

2. Prisoners rights

Is a Prisoner is also entitled to invoke Article 21? The aforesaid question and a series of other matters came up before the Supreme Court recently in *Sunil Batra v. Delhi Administration*.² This case originated, epistolary fashion, in a letter by a prisoner, Batra, to a judge of the Supreme Court complaining of a brutal assault (insertion of a stick in to the anus resulting in tears of anus and bleeding) by a Head Warden on another prisoner Prem Chand who was undergoing a life sentence. The prisoner's explanation for the anal rupture was stated to be an unfulfilled demand for money, allegedly a general practice. Batra was not afraid of the consequences of jail indignation and brought the incident to the knowledge of the Court, resulting in these proceedings which, though not strictly traditional, were clearly in the nature of habeas corpus writ and, therefore, within the wider sweep of Article 21. The protection of Article 21 is available even to convicts in jails. The convicts are not mere reason of their conviction deprived of all the fundamental rights, which they otherwise possess. Following the conviction of a convict is to put into the jail he may be deprived of fundamental freedoms like the right to move freely throughout the territory of India or the right to "practice" a profession. However, the Constitution guarantees to them other freedom like the right to acquire, hold, and dispose of property for the existence of which detention can be no impediment. Likewise, even a convict is entitled to the precious right guaranteed by Article 21 and he shall not be deprived of his life or personal liberty except according to procedure established by law.

Personal liberty of an accused or convict is fundamental and can be taken away only in accordance with the procedure established by law. So, deprivation of personal liberty must be founded on the most serious consideration relevant to the welfare objectives of the society specified in the Constitution. In the circumstances of the case, the Court held that subject to certain safeguards, the appellants were entitled to be released on bail.

It was observed that a substantial number of the prisoners are under-trials³ who have to face their cases in court and are presumably innocent until convicted. How cruel it would be, when one goes to a hospital for a check up and by being kept along with contagious cases comes home with a few diseases. Prison reform is now a constitutional compulsion and its neglect may lead to drastic court action⁴.

To clinch the issue, the Supreme Court issued as many as six directions (Mandates) to the States and Prison Staff, and ultimately held as follows:

*"... The prisoner's rights shall be protected by the Court by its writ Jurisdiction plus contempt power. To make this jurisdiction viable, free legal services to the prisoner programmes shall be prompted by professional organizations recognized by the Court such as 'Free Legal Aid (Supreme Court) society.' The District Bar shall, we recommend, keep a cell for prisoner relief"*⁵

3. Rights against inhuman torture and custodial deaths

In the landmark judgment *D.K. Basu v. State of West Bengal*⁶, the Supreme Court held that custodial torture is a naked violation of human rights, dignity and degradation, which destroys, to a very large extent the individual personality. It is a calculated assault on human dignity and whenever human dignity is wounded, civilization takes a step backward-flag of humility much must on such occasions fly half-mast.

In this respect, the Supreme Court further observed that the police with their wide powers are apt to use strong arm against those who happen to fall under their secluded jurisdiction. That tendency and the temptation

must in the larger interest of justice be nipped in the bud. "*Human dignity is a clear value of our constitution not to be bartered away for mere apprehension entertained by jail officials,*" declared Justice Krishna Iyer. Similarly, torture and ill treatment of women suspects in police lock ups has been held to be violative of Article 21 of the Constitution. The court gave detailed instruction to the concerned authorities for providing security and safety in police lock up and particularly to women suspects. Female suspects should be kept in separate police lock ups and not in the same in which male accused are detained and should be guarded by female constables. The Court directed the Inspector General of Prisons and State Board of Legal Aid Advice Committee to provide legal assistance to the poor and indigent accused (male and female) whether they are under trial or convicted prisoners.

The courts have recently viewed third degree methods and custodial deaths in police custody as a serious violation of human rights and constitutional provisions of right to life and liberty.⁷ In the case of *Smt. Nilabati Behara v. State of Orissa*⁸, the Supreme Court held the liability of custodial deaths and held that compensations for contravention of human rights and fundamental rights guaranteed in the constitution, is an acknowledged remedy for protection of such rights, and directed the State to pay Rs. 1.5 lakh compensation to the petitioner for custodial death of his son aged 22 years.

The right to protection against torture, which is enunciated in Article 5 of the Universal Declaration⁹ and guaranteed by Article 7 of the International Covenant on Civil and Political Rights¹⁰ (1976), has been read into the Constitution by the Supreme Court and various High courts. The Government of India has signed the UN Convention against torture and other cruel, inhuman or degrading punishment¹¹ (1987) on the recommendation of the National Human Rights Commission.¹² The Indian legislation has also prohibited the use of custodial violence in unmistakable terms. Under sections 330 and 331 of the Indian Penal Code (IPC), 1860, it is an offence to voluntarily cause hurt or grievous hurt to extort confession or to compel restoration of property. The punishment is also very severe. In case an offence committed under section 330, IPC. It is either description for a term which may extend to seven years and also fine. In case offence is committed is covered under section 331, IPC. The imprisonment is up to ten years Rigorous Imprisonment and fine.

The Code of Criminal Procedure, 1973 has empowered the Magistrate to enquire into the matter where any person dies while in police custody. Section 176 of the Code is relevant. The Indian Evidence Act (1872)¹³ also prohibits use of confession made before a police officer or in police custody and the one obtained through inducement, threat or promise, in criminal trials. These provisions are embodied in sections 24, 25, and 26 of the Evidence Act, 1872. In case of an accused is involved in Prevention of Terrorism Act, 2002, this confession before Superintendent of police may be admissible if certain safeguards are followed.

The Constitution of India gives the fundamental right to the citizen not to be compelled to be a witness against himself. Article 20 (3) of the Constitution says that no person accused of any offence shall be compelled to be a witness against himself. Further section 315 of the Code of Criminal Procedure, 1973, in proviso (a) provides that an accused shall not be called as a witness except on his own request in writing. Proviso (b) further safeguards his interest by providing that his failure to give evidence shall not be made subject of any comment by any of the parties or the court or give rise to any presumption against himself or any person charged with him at the same trial.

Minimum punishment of ten years is provided under Section 376 (2) of the Penal Code¹⁴ for rapes committed in police custody on a woman or within the limits of police station to which he is appointed or in the premises of any station house whether or not situated in the police station to which he is appointed; or on a woman in his custody or in the custody of a police officer subordinate to him.

The Indian Police Act 1861¹⁵, under which the entire police organisation in India derives its legitimacy and policemen have powers to function and it prohibits unwarranted personal violence by the police officers to any person in police custody. There are punitive procedures both administrative and judicial, in case of complaints of custodial violence against police officers. On January 18, 1996 the Supreme Court convicted and sentenced a senior IPS officer of Haryana, to imprisonment for 18 months for a perjury and contempt of court in case of illegal detention and abduction of two children from Agra in 1992. Besides, in another case on 9th May 1996, the

Supreme Court sentenced another senior IPS officer of Assam to three months for covering up unnatural death of an under trial prisoner three years ago. In another case reported in 'Times of India, May 14, 1996, acting on the CBI report, the S.C. ordered the State of Punjab to pay Rs. 10 lakhs compensation to the parents for abduction and murder of an Advocate, his wife and two years old child and falsely implicating an innocent person, and also pay Rs. 2 lakhs to the latter as compensation for the suffering caused to him due to false implication and remaining in jail since 1993.

In spite of the above violations of human rights and constitution and the sentence and convictions passed by the Supreme Court and other courts, there is no let up in illegal detentions of innocent people in police stations and torture camps, use of third degree methods during interrogation of suspects leading to custodial deaths in police custody. According to the statistics released by the National Human Rights commission for the year 2003-2004 (NHRC, 2005),¹⁶ there were 162 deaths in police custody and 1300 deaths in judicial custody besides one death in the custody of Para-military forces making a total of 1463 as against a total of 1340 such deaths in 2002-2003, (183 in police custody and 1157 in judicial custody). It was observed that there has been a decrease in the deaths reported to the Commission in police custody and an increase in deaths in judicial custody when compared to the previous year. The number of deaths in judicial custody has to be viewed in the context of the total number of prison inmates during the given period and most of the deaths being due to illness and natural causes. Approximately 80 % deaths in Judicial Custody are found to be due to natural causes. Uttar Pradesh topped the list of custodial deaths with 217 deaths – 18 in police and 199 in judicial custody. The National Human Rights Commission recommended compensation to the victim's family recovering from errant police officials besides other legal action.

4. Detention in civil prison

Whether it is violative of Article 21? The question came up before the Supreme Court in Jolly George Varghese v. The Bank of Cochin¹⁷, whether the arrest and detention in vigil prison under section 151 of the judgment debtor who had no means to pay the debt, was violative of Article 11 of the International Covenant of Civil and Political Rights and Article 21 of the Constitution? It was held as under:

"Equally meaningful is the import of Article 21 of the Constitution in the context of imprisonment for non-payment of debts. The high value of human dignity, and the worth of the human person enshrined in Article 21, read with Articles 14 and 19, obligates the State not to incarcerate except under law which is fair, just and reasonable in its procedural essence. *Maneka Gandhi's case (1978) 1 SCC 494, Sita Ram v. State of UP (1979) 2 SCR 1085 and Sunil Batra v. Delhi Administration, decided on 20th December, 1979 (SC)* lays down the proposition. It is too obvious to need elaboration that to cast a person in prison because of his poverty and consequent inability to meet his contractual liability is appalling. To be poor, in this land of Daridra Narayana (land of poverty) is no crime and to recover debts by the procedure of putting one in prison is too flagrantly violative of Article 21 unless there is proof of the minimal fairness of his wilful failure to pay in spite of his sufficient means and absence of more terribly pressing claims on his means such as medical bills to treat cancer or other grave illness.

5. Rights against solitary confinement

*In Sunil Batra (No. 1) v. Delhi Administration*¹⁸, the important question raised before the Supreme Court was whether 'solitary confinement'¹⁹ imposed upon prisoners who were under sentence of death was violative of Articles 14, 19, 20 and 21 of the Constitution. In this case, the two convicts who were confined in Tihar Central Jail filed two petitions under Article 31, challenging the validity of section 30 and section 56 of the Prisons Act. Sunil Batra, an accused, was sentenced to death by the District and Sessions Judge and his sentence were subject to the confirmation by the High Court and to a possible appeal to the Supreme Court. Batra complained that since the date of his conviction by Session Judge that was 6th July, 1976 he was kept in solitary confinement till the Supreme Court intervened on 24th February, 1978.

*Charles Sobhraj*²⁰, an under trial prisoner challenged the action of the Superintendent of Jail putting him into

bar fetters. He was arrested on 6th July 1976 and detained under section 3 of MISA. Since the time he was lodged in jail he was put in bar fetters notwithstanding of the recommendation of the jail doctor that bar fetters be removed. It was contended that section 30 did not authorize prison authorities to impose the punishment of solitary confinement. The Supreme Court accepted the argument of the petitioners and held that section 30 of the Prison Act did not empower the prison authorities to impose solitary confinement upon a prisoner under sentence of death. Under section 73 and section 74 IPC, solitary confinement is itself a substantive punishment which can be imposed by a court of law. It cannot be left within the caprice of prison authorities. The Court held that the expression "prisoner under sentence of death" in the context of S.30(2) could only mean the prisoners whose sentence of death had become final and could not be annulled or violated by any judicial or constitutional procedure. Thus, a prisoner was not under sentence of death till he had the right to appeal for mercy. If imposing solitary confinement there is total deprivation of camaraderie (friendship) amongst co-prisoners commingling and talking and being talked to, it would offend Article 21 of the Constitution. The liberty to move, mix, mingle, talk, share company with co-prisoners if substantially curtailed would be violative of Article 21 unless curtailment has the backing of law. Although solitary confinement was held to be violative of Article 21, section 30 was held to be valid because the procedure prescribed under it for the curtailment of prisoner's liberty in jail, was fair and just within the meaning of Article 21. If Section 30 is interpreted in this manner, its obnoxious element is removed and it cannot be said that there is deprivation of personal liberty without the authority of law. In the case of Charles Sobhraj it was contended that Section 56 of the Prison Act justified putting him into bar fetters. The petitioner contended that Section 56 was violative of Articles 14 and 21 as conferred unguided and arbitrary powers on the Superintendent to confine a prisoner in irons. The Court held that continuously keeping a prisoner in fetters day and night reduces the prisoners from a human being to an animal and this treatment was cruel and unusual that the use of bar fetters was against the spirit of the Constitution. Section 56 lays down certain conditions under which it can be done. Since these conditions were not present in the instant case therefore putting bar fetter cannot be justified. Section 56 is however valid. The petitions were therefore dismissed.

6. Rights against arbitrary arrest and detention (Art. 22)

Art 22 guaranteed four basic rights to the persons who are arrested under an ordinary law. These are: 1. the right to be informed as soon as may be of the grounds of arrest; 2. the right to consult and to be represented by a lawyer of his own choice; 3. the right to be produced before a magistrate within 24 hours; 4. the freedom from detention beyond the said period except by the order of the magistrate. According to art 21 no person can be deprived of his life or liberty except according to the procedure established by law. This means that a person can be deprived of his life or personal liberty provided his deprivation was brought about in accordance with the procedure prescribed by law. Art 22 prescribes those procedural requirements which must be adopted and included in any procedure enacted by the legislature. If these procedures are not complied with it would then be deprivation of personal liberty which is not in accordance with the procedures established by law. Art 22 deals with two separate matters: (a). Persons arrested under the ordinary law of crime and (b). Persons detained under the preventive detention. The first two clauses deal with detention under ordinary law of crimes and the remaining 3rd, 4th 5th and the 6th clauses deal with the arrest under the preventive detention laws.

As such Art 22 is a quintessential element in the discussion of criminal justice administration in India. At one time it was thought that Art 22 is a complete code in regard to laws providing for preventive detention and that the validity of the order of detention should be determined strictly according to the terms within the four corners of Art 22 (Pandey, 2003). it was held in Gopalan's case²¹ that a detenu cannot claim the freedoms guaranteed by art 19 (1) d if it was infringed by his detention, and that the validity of the preventive detention law was not to be tested in light of the reasonableness of the restrictions imposed thereby on the freedom of movement nor on the ground that his right to personal liberty was infringed under Art 21 other wise that according to the procedure established by law.

This view has now been shown to be wrong in *R.C. Kooper vs. Union of India*²²). Although this case is concerned with art 31 (2) but in *Maneka Gandhi's case*²³ the court has applied it in relation to art 21 also. According to this view a law relating to preventive detention must now satisfy not only the requirements of Art 22 but also the requirements of Art 21. In other words the procedures prescribed under the preventive detention must

be reasonable and just and fair under arts 14, 19 and 21 of the constitution.

Clause 1 and 2 of Art 22 confer four rights upon a person who has been arrested and these are as follows:

1. He shall not be detained in custody without being informed as soon as possible of the causes of his arrest.
2. He shall have the right to consult and to be represented by a lawyer of his own choice.
3. Right to be produced within 24 hours to the nearest magistrate.
4. Right not to be detained beyond 24 hours in custody without the authority of the court.

How ever it has been held in *State of U.P. v. Abdus Samad*²⁴, that if 24 hours have passed without compliance with the requirement of the clause, the arrested person is entitled to be released forth with. In *State of M.P. v. Shobharam*²⁵, the Supreme Court held that this requirement of producing within 24 hours be dispensed with if the person arrested is admitted on bail.

The guaranteed rights discussed above equally apply to the women offenders. But unfortunately the plight of women convicts has never been highlighted before. In the next chapter we discuss about the problems faced by the women offenders and suggested solutions by legal luminaries

Position of women prisoners

Even though right to life under Indian constitution has been broaden enough to include wide prison rights to the prisoners, unfortunate situation still prevails in the area of women prisoners. The Prison Act and the Prison Rules do talk about the segregation of the convicts on gender basis and certain rights to women convicts, yet the area needs special attention. Mostly women with children do not get access to their children after they are 6 years old when they are sent to government homes for the remaining period of their mother's conviction, in case the father or the other family members are incapable of taking care. Studies have shown that these children often fall pray for petty criminal gangs.

The position of victims who happen to be women or children has not merited the attention it deserves in the procedural statute (Muralidhar, 2005). The protection under Sec. 160 Cr.Pc that "no male person under the age of 15 years or women shall be required to attend any place other than the place in which such male person or woman resides" does not apply to a woman or a child who is picked up as a suspect.²⁶ Justice V.R. Krishna Iyer in his report on women prisoners (1997) has pointed out this lacuna. His suggestions are highly notable for improving the present situation:

- Policy guidelines should be developed, among others, on the arrest, interrogations, search and detention of women, bail and sentencing, pre-sentence investigations, use of socio-legal counseling, psychiatric services and scientific classification in the pre-trial and conviction process, presence of legal aid cells for women in every police district, diversion of women offenders to separate and specialized trial processes and to non-institutional correctional options, association of volunteers and voluntary agencies working in the field of women's development in the investigation and trial of offences and watching over custodial conditions, etc.
- Formulation and adoption of National Policy on Custodial Justice to Women.
- Creation of a statutory autonomous body to be designated as the National Authority on Custodial Justice to Women (NACJW) which should have the representation of every component of the criminal justice system namely the judiciary, law, legal aid, police, prisons, probation and aftercare, and social welfare and mental health custodial institutions. It should also include representatives of medicine, psychiatry law schools, schools of social work, women's groups, human rights and civil rights groups, the media, professional research and training bodies in criminology and social defence, etc.
- Specialized courts must be set up to dispense justice separately and speedily to women. In addition to the separate Women's Courts or Family Courts it is recommended that Nari Bandigriha Adalats be held in the nature of mobile judicial camps as an immediate modality for rendering speedy redress to women in custody. Such camps and courts should be held urgently and routinely in social welfare and mental health

custodial institutions also to clear the backlog of pending cases, and to render speedy justice. The mobile adalats should be conducted on a district-wise or cluster basis so as to cover all prisons and non-prisons custodial institutions. Its objectives should be to provide speedy justice.

- Prison should be brought into the concurrent Lists of the Seventh Schedule of the Indian Constitution in order to strengthen the process of standardized and uniform national approaches to reform of custodial conditions.
- There is need to have a Comprehensive Prison and Prisoners Act which can bring together in a single Act the provisions presently dispersed in several Acts.
- A comprehensive code to cover the administration of all custodial institutions and the treatment of inmates of such institutions, with special provisions for the treatment and handling of women.
- A critical assessment of the efficacy and relevance of various legislations bearing on women's status in custody and their criminality should be undertaken by the Law Commission.
- On an immediate basis, appropriate amendments and additional provisions should be introduced in the IPC and Cr. PC as well as in the Prisons Act, 1894 and Police Act, 1861 to reflect the special needs of women in custody.
- With regard to the Police Act, 1861, the Committee had recommended to replace the existing outmoded Act with a new Act.
- The rights of dependent children of custodialized women also need to be clearly outlined in the present legislation.
- The Committee would like the new Mental Health Bill to reflect the specific recommendations made by the Committee in respect of the custody and treatment of non-criminal and criminal lunatic women and mentally distressed women in custody.
- Apart from female staff in women's jails, there should be women D.I.G. in the state Headquarters preferably from the prison services, particularly to look after the work relating to women prisons, women prison staff and women prisoners.
- There should be permanent wardens and matrons in institutions and it should be mandatory to recruit them rather than to rely on make shift substitute arrangements.
- Released Prisoners' Aid Societies should operate in every district which can provide single-window assistance toward the habilitation and mainstreaming of the released prisoners.
- The States must agree to enforce a uniform prison manual. Prison amenities for women and for their children, and the rights and duties of women prisoners should be clearly identified preferably in a separate volume of the prison manual.
- Separate police lock-ups should be established in consultation with State IGs of Police. It should be mandatory for each police station to provide enclosed space for holding all arrestees and separated space for female arrestees. Separate Women's police stations where they exist should be suitably reinforced with adequate training and tools of the trade.
- A model police manual should be compiled on the lines of the model prison manual and it should be strictly and uniformly enforced by all States. The manual should carry indicative standards of minimum space and other facilities and procedures applicable to women when in police custody. The police should be widely consulted in the preparation of the manual.
- A special unit known as women's Assistance Police Unit (WAPU) should be created which should be combined cadre of men and women police, to deal specifically with crime preventive work and assistance to women at the time of arrest and in custody.
- Appropriate linkages should be established between custodial authorities and voluntary groups/individuals in protecting the rights and dignity of women not only in custody but also outside.
- Counseling cells should be attached to every custodial centre and such cells should encompass the custodial staff.

Justice Krishna Iyer strongly opines that people's participation should motivate those who operate the system to manage the system better. The successful implementation of the approach should be given due recognition and wide publicity. However, some important steps are being taken by the Central government on the direction of the Supreme Court. The Supreme Court on 13th April 2006 has delivered a set of guidelines to protect the rights of women prisoners and their children in jail asking the Centre and state governments to amend and incorporate the new directions within three months. Among the important guidelines, the apex court directed the authorities that pregnant under trials should be taken to hospitals outside the jail premises for delivery and the birth certificate of the child should not mention jail as the place of birth. Ensuring that the children of women prisoners are not condemned, a bench comprising Chief Justice Y K Sabharwal, Justice C K Thakker and Justice P K Balasubramanian directed the authorities to follow its guidelines in letter and spirit so that the fundamental rights of children to education and healthy living are not violated when they are staying with their under trial or convicted mother in the jail (Zee News 2006).

The plight of rape victims is compounded by their being held in 'protective custody' in jails or in the nari nicketans (women's shelters), on the pretext that they are required for giving evidence although such detention has no legal basis²⁷. The law's response to the needs of victims of rape and other violent crimes against women has been both predictable and inadequate. In imposing severe and minimum punishments²⁸ for the offence and in shifting the burden of proof,²⁹ the law fails to address the needs of the victim to be treated with dignity, to sustained protection from intimidation, to readily access the justice mechanisms, to legal aid and to rehabilitation. There is yet no provision in the law mandating 'in-camera' trials, particularly when the victim is a child³⁰. There is also no statutory scheme recognising the rehabilitative needs of the victims of rape (Kirchhoff, 1994).³¹ The legislative and executive apathy to the problem stands in contrast with the response of the Supreme Court in *Delhi Domestic Working Women's' Forum v . Union of India* (1995 1SCC 14)., where the Supreme Court pointed out legal representation and assistance should be extended to the victim at once, the police should be under a duty to inform the victim of her right to representation before any questions were asked of her and she should financially compensated by the court.

Conclusion

"Right to life" under Art 21 of the Indian constitution is a broad concept which has covered every possible right to be guaranteed to the prisoners, under trials and convicts of any democratic country. The basic amenities of right to life in case of prison rights which are guaranteed under arts, 21 and 22 are the oxygen tubes for the convicts and the victims as well. But a big black hole still exists in the case of women offenders. Even though India is a land of Shakti worshippers, from the above study, it can be seen that women prisoners deserve better care. In a patriarchal society like India, women prisoners are seen as worse as witches. In most cases, they are denied access to their homes, family and children after their release. But undoubtedly, women prisoners are mostly victims of circumstances, unlike their male counterparts. Broader outlook and wider views are still wanted to uplift the condition of women prisoners in India.

Even though right to equality is guaranteed to every Indian citizen irrespective of their sex; legislation needs to work on the safeguards to be guaranteed to the women offenders. Indian constitution is a growing constitution and hence the concept of right to life should be amended along with the global change of ideologies. New amendments should be brought in the concept of prison rights under the broad arena of Right to life. Newly improved rules of prison management and criminal psychology should be considered to give way to a broader idea of right to life for the convicts and under trials for the betterment of prison life in India successfully.

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- 3 Sunil Batra v. Delhi Administration
- 4 AIR 1980SC 2579
- 5 ibid at p. 1063
- 6 JT 1997 (1) SC 1
- 7 ibid
- 8 1993 2SCC 746
- 9 Universal Declaration of Human rights
- 10 The International Covenant on Civil and Political Rights is a United Nations treaty based on the Universal Declaration of Human Rights, created in 1966 and entered into force on 23 March 1976. Because the Universal Declaration of Human Rights contained both first-generation civil and political rights and second-generation economic, social, and cultural rights, it could not garner the international consensus necessary to become a binding treaty. Particularly, a divide developed between capitalist nations such as the USA, which favoured civil and political rights, and communist nations which favoured economic, social and cultural rights. To solve this problem, two binding Covenants were created instead of one: the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social, and Cultural Rights.
- 11 The United Nations Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (UNCAT) is an international human rights instrument, organized by the United Nations and intended to prevent torture and other similar activities. It created the UN Committee against Torture, which focuses on the duties of national leaders in a preventive role. UNCAT came into force in June 1987 and to date 141 nations are party to it, with another 10 having signed but not yet ratified.
- 12 The National Human Rights Commission of India was set up under the Human Rights Act, 1993.
- 13 The Indian Evidence Act, originally passed by the British parliament in 1872, contains a set of rules and allied issues governing admissibility of any evidence in the Indian courts of law.
- 14 Indian Penal Code, 1860
- 15 The Police Act of 1861 remains the central piece of legislation that governs all aspects of policing in India. The 1861 Act was established directly after the Indian Mutiny of 1857. The advent of Indian independence transformed the political system, but the police system retained its colonial underpinnings and the Police Act of 1861 is still not replaced.
- 16 Statistics from the Annual Report of the National Human Rights Commission (2003-2004). It is the most recent report.
- 17 AIR 1980 sc 470
- 18 1979 (SC)
- 19 Solitary confinement, colloquially referred to as "the hole", is a punishment in which a prisoner is denied contact with any other persons, excluding guards and doctors.
- 20 Charles Sobhraj (born April 6, 1944 in Saigon, and then adopted as French) is a serial killer who preyed on Western tourists throughout Southeast Asia during the 1970s. Nicknamed "the Serpent" for his skills at deception and evasion, he allegedly committed at least 12 murders and was jailed in India from 1976 to 1997, but managed to live a life of leisure in prison. He retired as a celebrity in Paris, and then unexpectedly returned to Nepal, where he was arrested and sentenced to life imprisonment on August 12, 2004.
- 21 AIR 1950 SC 27
- 22 AIR 1970 SC 564
- 23 AIR 1978 SC 597
- 24 AIR 1962 SC 1506
- 25 AIR 1966, SC 1910
- 26 The Supreme Court emphasised the mandatory nature of this requirement in *Nandini Satpathy v. P.L. Dani* (1978) 2 SCC 424. The Rule that an arrest of woman should not be detained beyond sunset was evolved judicially: *Christian Community Welfare Council of India v. Government of Maharashtra* (1996) 1 Bom CR 70 but even this has been held not to be mandatory by the Supreme Court in *State of Maharashtra v. Christian Community Welfare Council of India* (2003) 8 SCC 546.
- 27 The practice of keeping victim women in jails for giving evidence was strongly deprecated in *Hussainara Khatoon v. State of Bihar* (1980) 1 SCC 93 (at 96) as "nothing short of a blatant violation of personal liberty guaranteed under Article 21 of the Constitution." S.376 (2) prescribes a minimum sentence of ten years and a maximum sentence of life imprisonment for certain severe forms of rape.
- 28 15 For e.g., S. 114 A, Evidence Act 1872 raises a presumption as to the absence of consent where the woman raped says in her evidence before the court that she did not consent. Recently some token amendments have been made recognising the need for preserving the dignity of the victim: S.155 (4) Evidence Act 1872 which permitted the impeachment of the credibility of a prosecutrix by reference to her general "immoral character" now stands repealed. S. 228 A prohibits the disclosure of the identity of the victim in any publication concerning the offence.
- 29 An attempt is being made through a PIL in the Supreme Court (*Sakshi v. Union of India* (2001) 10 SCC 732) to get the legislature to remedy this lacuna.
- 30 Societal support to victims of sexual crimes is seldom available. From a victimological perspective, studies show that in sexual crimes against females and children of both sexes, the greater damage is often done by the reactions of others. This is termed as secondary victimization.

PARENTAL CHILD-REARING ATTITUDES AND CRIMINAL BEHAVIOUR

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ABSTRACT

The Present study was intended to investigate the child-rearing attitudes of parents of criminals and non-criminals. A randomly selected group of 200 male criminals equally divided into property and person criminals and the same number of non-criminals were interviewed in order to have an account of the child-rearing attitudes of their parents. It was found that the person criminals followed by property criminals, greatly suffered from the child-rearing attitudes of their parents as compared to their non-criminal counterparts who were more graceful at this count.

Introduction

Socialization is the process by which the new child is moulded into the culture of his/her group, and thereby becomes an accepted member of the society. In any particular culture, it is through the process of socialization that the child acquires the attitudes and values of that culture and develops into an individual with culturally appropriate behaviour patterns. The life style that the individual adopts, and his/her personality are largely a matter of the socialization practices prevalent in a culture (Bisht & Sinha, 1982; Ojha & Singh, 1988; Hussain, 1982; Sharma & Anandalakshmy, 2002; Singh & Fatmi, 1980;). In short, socialization may be described as a process which focuses upon the development of the individual as a social being and as the member of a society. It teaches the child the ways and norms of his/her society and moulds him/her in his/her early stages of development, thus determining, to a large extent, his/her later personality structure and style of behaviour pattern. In fact, the kind of child-rearing practices which are adopted by parents — the primary agents of socialization (Sharma & Anandalakshmy, 2002; Singh, 1980) — may be held responsible for the development of psychological differentiation. Thus, in order to explore the dynamics of criminal behaviour it is needed to analyse the child-rearing practices adopted by parents of criminals during their socialization. But, not much efforts have so far been made to identify a typical child-rearing attitude generally adopted by the parents of criminals. Hence, this study was designed.

Researches have indicated that parents generally resort to restrictive, permissive, loving, neglecting, protecting and rejecting attitudes during the socialization of their children. As may commonly be observed, dependence on restrictive, neglecting and rejecting, as against permissive, loving and protecting attitudes usually shatters a child from within, and does not allow him/her an atmosphere conducive for the development in him/her of moral and social values, as well as the feeling of autonomy and control ability. The child generally becomes susceptible to different maladaptive behaviours generally marked by aggression, hostility, emotionality, unsociability, etc., more likely leading to criminal acts. A number of studies carried out in India and abroad have come out with similar results. For example, investigators like Butcher (1965); and Halfield et al. (1967) have shown that physical punishment leads to aggression. Also, there are studies (Eysenck, 1970; Husain, 1982) which have reported a positive relationship between aggression and criminality. Thus, it leads to the expectation that the power assertive discipline or rejection by either or both of the parents is likely to promote delinquent or criminal acts to a substantial scale. Though conflicting in their findings, several researches lend support to the above conclusion (Bhaduria, 1982;), Azar, Barnes & Twentyman (1988) Ekblad (1988); Henggeler et al. (1985) and Kellert & Felthous (1985) have also found that different abusive techniques such as neglect, withdrawal, rejection and use of power assertion by parents lead to criminal propensity. On the basis of his study, Shastree Tara (1976) has indicated that lack of maternal care and attention develops in an individual a clear tendency of criminality. In a similar attempt,

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Mukherjee & Singh (1985) have found that criminals, as compared to their non-criminal counterparts, clearly undergo a more frequent use of power assertion by their parents. Sowaid (1972) has also reported that criminals are generally subjected to power assertive discipline during their socialization. According to him, a technique like induction is hardly devised to discipline them. Thus, as it has been maintained (Wilson, 1987), there exists a significant association between parental supervision and delinquency among boys. On the basis of the findings of the above studies, criminals, as compared to non-capital criminals, would be presumed to have greater experiences of the frequent use of rejecting, neglecting and restrictive attitudes, and lesser experiences of the use of loving, protecting and permissive attitudes by their parents during their child-rearing. But probably, hardly any effort has so far been made to compare different types of criminals (person and property criminals) and non-criminals in terms of the frequency of different kinds of attitudes adopted by their parents during their infancy.

Method

Sample : A randomly selected group of 200 male criminals equally divided into (1) property criminals and (2) person criminals, and the same number of non-criminals participated as respondents in this investigation. The offenders convicted for the crimes of robbery, theft, cheating, etc., comprised the group of property criminals. On the other hand, the group of person criminals mainly subsumed offenders incarcerated on charges of murder, assault and sex crimes. The group of the non-criminals involved those people who had never been imprisoned for any kind of criminal activities. All the criminal groups were inmates of Camp and Central Jails of state of Bihar in India. The non-criminals were the inhabitants of the rural areas of state of Bihar in India. All the groups of respondents were between 20 and 40 years of age, belonging to rural lower class families with the earning of Rs. 4500 to Rs. 7500 per annum. All of them were married and had an elementary knowledge of reading and writing Hindi.

Instrument

A modified version of Parental Behaviour Inventory (PBI) scale developed by Yadav (2005) in Hindi was used to elicit information as to the disciplinary techniques practiced by the parents. The scale was available in two forms viz, father form and mother form and it measured six different modes of parental behaviour such as Restrictive, Permissive, Loving, Neglecting, Protecting and Rejecting. The maximum possible score for any Disciplinary category was 30 and minimum 01. Higher score on a particular scale was indicative of a greater leaning towards a particular mode. For father form, the reliability of the modified version of the scale, the Cronbach Alpha Co-efficients with rij for each dimensions, was found to be 0.69, 0.31 (restrictive), 0.53, 0.53 (Permissive), 0.68, 0.29 (Loving), 0.70, 0.28 (Neglecting), 0.64, 0.31 (Protecting), 0.63, 0.29 (Rejecting) respectively and in the case of Mother form (0.68, 0.29) (0.55, 0.55), (0.67, 0.28), (0.69, 0.27) (0.65, 0.32) (0.64, 0.31) for the different tests respectively.

Convinced of the intention of the investigation, the subjects extended their sincere participation and full cooperation, This was quite evident from their willingness to participate in the study, as well as their often searching enquiries of about the findings thereof.

Results

Two main hypotheses were tested in the present investigation. Firstly, it was contended that the criminals (person and property criminals) would not only differ between themselves but also differ from non-criminals in terms of the child-rearing attitudes held by their mothers towards them. The findings obtained from statistical comparison between different groups of criminals and non-criminals are being presented in Table – 1

Table - 1
Statistical comparison among different Groups of Criminals (Person and Property Criminals) and Non-criminal in terms of the Child-rearing Attitudes adopted by their Mother towards them

Dimensions of Aggression	Restrictive		Permissive		Loving		Neglecting		Protecting		Rejecting		Total (0-125)	
	Mean (%)	SD	Mean (%)	SD	Mean (%)	SD	Mean (%)	SD	Mean (%)	SD	Mean (%)	SD	Mean (%)	SD
A	18.49 (73.96)	4.36	2.02 (40.40)	0.96	11.99 (47.96)	3.09	22.38 (74.60)	5.56	11.24 (56.20)	3.07	15.75 (78.75)	3.57	81.87 (65.50)	10.03
B	17.69 (70.76)	3.96	2.19 (43.80)	1.06	12.64 (50.56)	3.44	21.62 (72.06)	4.62	11.69 (58.45)	4.62	14.86 (74.30)	3.06	80.69 (64.55)	9.85
C	11.84 (47.36)	3.39	3.59 (71.80)	1.27	17.81 (71.24)	3.69	13.72 (45.40)	3.01	15.27 (76.36)	3.01	10.37 (51.85)	2.66	72.60 (58.08)	0.37
t-ratio														
A x B	1.36		1.19		1.40		1.05		1.07		1.89		0.8	
A x C	13.38** *		11.97** *		14.39** *		14.54** *		10.78** *		13.33** *		7.72** *	
B x C	12.65** *		10.10** *		11.99** *		15.53** *		10.01* *		12.50** *		6.81** *	

Note – A = Person Criminal (N=100); B = Property Criminal (N=100); C= Non-criminal (N=200).

** Significant at 0.01 level

* Significant at 0.05 level

The mothers of person criminals were found to have carried rejecting (78.75%), neglecting (74.60%) and restrictive (73.96%) attitudes for the rearing of their children. The mother of property criminals also depended largely on rejecting (74.30%), neglecting (72.06%) and restrictive (70.76%) patterns of attitude in course of the rearing of their children. Contrary to the mothers of the criminals, the mothers of the non-criminals were found to attach much priority to protecting (76.36%), permissive (71.80%) and loving (71.24%) patterns of attitudes for the rearing of their children.

Secondly, it was presumed that criminals (person and property criminals) would not only differ between themselves but also differ from non-criminals in terms of the child-rearing attitudes adopted by their fathers towards them. Table - 2 records the findings obtained from statistical comparison between different groups of criminals and non-criminals in terms of the child-rearing attitudes (restrictive, permissive, loving, neglecting, protecting and rejecting) carried by their fathers towards them.

Table - 2
Statistical comparison among different Groups of Criminals (Person and Property Criminals) and Non-criminal in terms of the Child-rearing Attitudes adopted by their Father towards them

Dimensions of Aggression	Restrictive		Permissive		Loving		Neglecting		Protecting		Rejecting		Total (0-125)	
	Mean (%)	SD	Mean (%)	SD	Mean (%)	SD	Mean (%)	SD	Mean (%)	SD	Mean (%)	SD	Mean (%)	SD
Groups														
A	19.05 (76.20)	3.48	2.12 (42.40)	0.93	13.22 (52.88)	3.61	22.64 (75.46)	4.48	10.47 (52.35)	2.89	15.52 (77.60)	3.56	83.02 (66.42)	10.89
B	18.19 (72.76)	3.66	2.37 (47.40)	1.27	14.04 (56.16)	3.02	21.83 (72.76)	4.02	11.08 (55.40)	2.77	14.78 (73.90)	3.12	82.29 (65.83)	10.14
C	12.84 (51.36)	2.55	3.59 (71.80)	1.08	18.07 (72.28)	3.91	13.48 (44.93)	3.27	15.25 (76.25)	3.12	11.37 (56.85)	2.82	74.60 (59.68)	9.74
t-ratio														
A x B	1.70		1.59		1.14		1.34		1.52		1.56		0.49	
A x C	15.84** *		12.25** *		10.66** *		18.17** *		14.31** *		10.17** *		6.53** *	
B x C	13.11** *		8.24**		9.84**		18.01** *		11.78** *		9.21** *		6.27** *	

Note – A = Person Criminal (N=100); B = Property Criminal (N=100); C= Non-criminal (N=200).

** Significant at 0.01 level

* Significant at 0.05 level

Both the groups of criminals were not only found to differ between themselves in terms of the attitudes adopted by their fathers for their rearing in childhood, but they also showed a marked tendency to differ from the group of non-criminals in terms of different child-rearing attitudes expressed by their fathers. Moreover, the fathers of person criminals were also found to be relatively high on rejecting (77.60%), restrictive (76.20%) and neglecting (75.46%) patterns of child-rearing attitudes. Similar attitudes were exhibited by the fathers of the property criminals in the rearing of their children. The property criminals also bore the trauma of rejecting (73.90%), restrictive (72.76%) and neglecting (72.76%) patterns of child-rearing attitudes of their fathers. But, in the case of non-criminals, protecting (76.25%), loving (72.28%) and permissive (71.80%) patterns of attitudes were relatively given more priority by their fathers for their rearing in childhood. Thus, while the child-rearing attitudes adopted by the fathers of criminals (person and property criminals) were apparently harsh in their intent, those adopted by the fathers of the non-criminals were fairly mild in their spirit.

Discussion

Thus, a thorough inspection of the results obtained in terms of the child-rearing attitudes adopted by either of the parents indicated that there existed a close congruence in the child-rearing attitudes of fathers and mothers of both the criminals and the non-criminals. While both the mothers and fathers of the criminals adopted harsh attitudes in the rearing of their children, the fathers and the mothers of the non-criminals almost expressed mild attitudes in their rearing. The results of this investigation were quite in conformity with the findings of a good number of investigations (Azar, Barnes & Twentymann, 1988; Bhaduria, 1982; Ekblad, 1988; Henggeler et al., 1985; Kellert & Felthous, 1985; Shastree Tara, 1976; Mukherjee & Singh, 1985; Sowaid, 1972). These investigations have shown that the parents — the primary agents of socialization (Bisht & Sinha, 1981; Tandon, 1981) — of criminals generally adopt harsh attitudes such as neglect, love-withdrawal, rejection, etc., in the

rearing of their children. The adoption of such harsh attitudes in child-rearing, as it has been recorded (Kumari, 2001; Singh, 1991), leads to the development of frustration — a thing that blocks one's attaining a goal (Myers, 1983). And, if the frustration aggression hypothesis propounded by Dollard et al. (1939) hold true, there is no doubt in it that frustration developed in childhood is more likely to manifest itself in the form of aggression, especially when the control of parents over their children weakens or relaxes. Further, there are studies (Eysenck, 1970) which have reported a positive relationship between aggression and criminality. Thus, why different harsh child-rearing attitudes adopted by parents trigger criminality to a large scale may clearly be understood in the light of the above mentioned arguments. The arguments also find support from the findings of Hoffman & Saltzstein (1967) and Karma et al., (1998). According to them, it has been established that love-oriented disciplinary technique is apparently most effective in the internalization of the moral and social values and the development of long-term internal control of guilt. Obviously, this kind of orientation appeals to the child's reason and his/her guilt consciousness. Harsh child-rearing patterns of attitudes, on the other hand, generate hostility in the child and impede internalization of self-control. Thus, the use of a harsh disciplining pattern results in inadequate socialization. And, following the results of the study by Gough & Sandhu (1964), it can reasonably be argued that the lack of adequate socialization leads to anti-social and criminal behaviour. Adopting of a harsh attitude by parents in disciplining their children is eventually frustration-generating. Further, following the frustration-aggression hypothesis, it may be conceived that frustration leads to the development of aggression — one of the significant preconditions for behaviour. To conclude, child-rearing attitudes like love-withdrawal, rejection, restriction, neglect, etc., adopted by parents may be considered as promoters of anti-social behaviour like criminality in their children.

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VIOLENT CRIMES IN POST-DISASTER PERIOD

Rajendra Kumar Pandey*

ABSTRACT

Amongst the various types of criminal behavior one that attracts a vengeful response from the society, is the category of violent crimes. What is, however, of greater significance is the positioning of the occurrence of violent crimes in certain uncommon cataclysmic situations - one such situation being the period immediately after the onset of a disaster during which the entire human efforts are mounted to cope up with the adverse situations with the provisions of adequate rescue and relief operations. It is generally assumed that the violent criminal activities take place on the part of the criminal in a fit of rage when he becomes bereft of the fundamental human virtues of wisdom, kindness, sacrifice and help to others. But the problem becomes quite perplexing when we find that violent crimes are committed at a time when the situation is very pitiful, requiring utmost sympathetic response from the people. It is indeed a paradox that in the times of post-disaster response situations when the whole set of steps are taken to alleviate the adverse impacts of the catastrophe; a few people are drawn to commit violent crimes even in those calamitous and painful situations. This paper strives to look into the various aspects of the occurrence of violent crimes in the post-disaster period during a calamitous situation.

Key Words:

VIOLENT CRIME : Crime involving violence which not only affects the victim in persona but leaves the entire community in a state of perpetual insecurity, apprehension, and annoyance.

DISASTER : A calamitous situation in which the day to day patterns of life are, in many cases, suddenly disrupted and people are plunged into helplessness and suffering and as a result, need protection, clothing, shelter, medical and social care and other necessities of life.

POST-DISASTER PERIOD : The period immediately after the occurrence of a disaster.

Crime and criminality are inescapable features of the social ambience inhabited by the human beings owing to the propensity of some people for deviant behavior in certain pressing situations. Crime, therefore, far from being an individual affair, more often than not, is the frustrating outcome of the social situations which provide stimuli to an individual leading him to different types of criminal behavior.¹ Amongst the various types of criminal behavior, one that attracts a vengeful response from the society is the category of violent crimes. What is, however, of greater significance is the positioning of the occurrence of violent crimes in certain uncommon cataclysmic situations- one such situation being the period immediately after the onset of a disaster during which the entire human efforts are mounted to cope up with the adverse situations with the provisions of adequate rescue and relief operations. It is generally assumed that the violent criminal activities take place on the part of the criminal in a fit of rage when he becomes bereft of fundamental human virtues of wisdom, kindness, sacrifice and help to others. But the problem becomes quite perplexing when we find that violent crimes are committed at a time when the situation is very pitiful requiring utmost sympathetic response from the people. It is indeed a paradox that in the times of post-disaster response situations when the whole set of steps are taken to alleviate the adverse impacts of the catastrophe; a few people are drawn to commit violent crimes even in those calamitous and painful situations.

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This paper strives to look into various aspects of the occurrence of violent crimes in the post-disaster period during a calamitous situation. Based on the two case studies of the Katrina Hurricane in the United States and the Kashmir earthquake in India and Pakistan, the paper tries to analyze the dynamics of the occurrence of violent crimes in the post-disaster period. Contrasting the two different socio-cultural and seemingly administrative milieus, it dwells deep into the causation of violent crimes and suggests some plausible remedial measures to minimize, if not totally eradicate, the occurrence of violent crimes in such situations. While writing the paper, both primary and secondary sources have been accessed. The primary sources consist of the interview of not only the victims in India but also some experts of the subject. The secondary sources include some important books, unpublished dissertation, and articles published in the journals and newspapers.

THEORETICAL POSTULATES

For an unambiguous understanding of the dynamics of violent crimes in the post-disaster situations, the basic inherent theoretical postulates of the subject need to be delineated at the very outset. The two basic concepts involved in the paper are the 'violent crime' and the 'post-disaster period'.

CRIME AND VIOLENT CRIME

Ordinarily, crime is the deviant behavior of an individual against the accepted norms of the society.² In general, human actions can be classified into two broad categories- (i) those conforming to the norms of the society, and (ii) those not conforming to these norms. Thus, conformity to norms means behavior according to generally accepted norms of the society while non-conforming means violation of these accepted norms. But there is persistent ambiguity in the definition of crime and deviant behavior. Crime, as defined in criminology, is violation of legal norms. In the social sense, deviant behavior is the commission of an act prohibited by society. The idea of deviant behavior is not an invention of a sociologist but is a fact of social life. People in society term certain acts as violation of norms and certain individuals as norm-breakers. Nevertheless, they would fail to precisely define deviance and conformity because sometimes people themselves are not sure as to what deviance and conformity are.³ Thus, the concept of crime is relative in the context of law as well as society. In the unfolding history of criminal laws in different parts of the world, the concept of crime as to what it entails has also undergone a vast change. For instance, the practice of sati, child marriage and discrimination on the basis of caste were socially acceptable and practiced in India once upon a time. Today, they are all punishable under the law of the land.⁴

In legal parlance, crime is an act that is punishable under the law. However, it is the behavioral dimension of the concept of crime which is central to the science of criminology. A behavior that violates the law is regarded as criminal behavior. The entire gamut of criminal behavior falls into two categories namely (i) *mala in se* (acts which are recognized as crime in legal statutes and are also considered to violate the accepted moral values of the society like murder, theft, rape etc.) or (ii) *mala in prohibita* (acts which are recognized as crime in legal statute but do not strictly reflect the accepted moral values of society like filing of Income –Tax returns, traffic violations etc.). Thus, the violent crimes fall in the former category of crimes, that is, *mala in se* as the incidents of such crimes shatter the very foundations of the social order leaving people in a state of shock and awe.⁵ The critical characteristic of the violent crimes is that it not only affects the victim in persona but leaves the entire community in a state of perpetual insecurity, apprehension and annoyance.

For instance, the recourse to violent criminal activities by the terrorist organizations is not aimed only to target the specified victims but also to carry out indiscriminate massacre in order to destroy utterly the public peace leaving people in perennial turmoil.

A government publication in India⁶, for the purpose of crime analysis, classifies violent crimes in various categories on the basis of the affected target. Therefore, the criminal acts like murder, attempt to commit murder, culpable homicide not amounting to murder, dowry deaths, kidnapping and abduction are demarcated as violent crimes affecting life. Similarly, the violent crimes affecting property include dacoity, preparation and assembly

for dacoity, robbery etc. The two other groups of violent crimes referred to in the document are violent crimes affecting public safety like riots and arson as well as the violent crimes affecting women i.e. rape. Thus, these violent crimes are truly the crimes that are mala per se since they are not only recognized as crime in legal statutes but are also considered violating the accepted moral values of the society.

POST- DISASTER PERIOD

In common parlance, disaster is defined as a catastrophic situation in which the day to day pattern of life are, in many instances, suddenly disrupted and people are plunged into helplessness and suffering, and as a result need protection, clothing, shelter, medical and social care and other necessities of life.⁷ Management of such a disaster becomes a very complex process involving numerous activities undertaken in both the pre-disaster and the post-disaster period. Ideally, the pre-disaster period is the span of time before the onset of a disaster during which the steps pertaining to prevention, mitigation and preparedness are taken.⁸ The primary objective during this time-period is to avert the disaster to the extent possible and in case the disaster strikes, mitigate the adverse effects of the event by affording a superlative degree of preparedness involving the measures like warning, threat-anticipation and other precautionary steps. The pre-disaster arrangements, in nutshell, aim at mitigating, if not preventing, the adverse effects of the calamitous event within the constraints of resources and physiological setting.

Since an absolute prevention of disasters is much beyond the capabilities of the human ingenuity, the onerous responsibility that befalls on the human beings are to manage the disaster in such a way that the ensuing damages to life and property may be minimized to the best possible limits. Thus, the post-disaster period i.e. the period immediately after the occurrence of the disaster, assumes greater significance as it is the time when the best possible efforts are mounted to mitigate the sufferings of the people. The post-disaster period is, therefore, the time span of disaster response consisting of the sum total of actions taken by the people and institutions in the face of a disaster. These actions commence with the warning of an oncoming threatening event or with the event itself if it occurs without warning⁹.

Disaster response, generally, includes the implementation of disaster preparedness plans and procedures, thus overlapping with disaster preparedness. The end of disaster response comes with the completion of the disaster rehabilitation programs.¹⁰ However for the purpose of this paper, the post-disaster period is confined to what may be called as the Emergency response to indicate that it applies to a fairly short period (i. e. 2-3 weeks after the impact) and thus excludes the activities of restoration, rehabilitation and restructuring which take place in a span of 5-10 years or even more.

The needs of people are virtually same in every disaster and include the four basic human needs for food, clothing, shelter and medical care. To accomplish this, the services provided to the victims of the disaster include distribution of necessary commodities such as clothing, blankets, preserved food and kitchen utensils; construction of temporary shelters including distribution of necessary materials for repairing or building houses; feeding; financial assistance to help cover medical expenses due to disaster; financial assistance to cover the replacement of some tools and materials damaged in disaster; traveling aids for the disaster victims who need to return to their homeland; and transportation for evacuation and rescue operations.¹¹

CRIMES IN POST-DISASTER PERIOD

The incidents of crime during post-disaster period are not uncommon phenomena owing to the deviant behavior of certain individuals in any sort of situations. Numerous instances of corruption, mismanagement of the relief supplies, lapses in crowd management leading to stampede resulting into the death of tens of hundreds of people and discriminatory behavior on the part of the concerned officials in the relief operations are some of the criminal practices that are experienced in one or the other types of post-disaster situations.¹² But the occurrence of the violent crimes in post-disaster period is really uncommon. Generally, the post-disaster period is that of grief and sorrow for all due to the sudden calamity that befalls on the people indiscriminately, sparing

none. In response to the calamity, a vast array of rescue and relief operations are undertaken. The people are housed in the temporary shelters at safer places after being rescued from the disaster situations. It is in these temporary shelters housing the sufferers of the calamity that diverse types of violent crimes take place. Thus, though the post-disaster period is not propitious for committing violent crimes, yet it does not remain a universal fact and instances point out towards the occurrence of the violent crimes during the post-disaster period.

PREVIOUS STUDIES

As pointed out earlier, the subject of violent crimes in the post-disaster period is of unconventional nature defying frequent studies by the scholars on the various aspects of the subject. It is, therefore, obvious that not many studies would have been conducted on the theme. To begin with, it may be noted that even the issue of crime in post-disaster period, which is a broader concept than that of the violent crimes, has not been of much interest to the scholars in the field, the net result of which is an absence of any systematic and comprehensive study on the subject. In so far as the subject of violent crime in post-disaster period is concerned, it may be convincingly said that the area has remained unexplored till date at the hands of the researchers in social sciences. Thus, by way of the survey of literature on the subject, just a few ancillary research papers and monographs can be got hold of.

One of the early endeavors to study the complex issue of violence, not violent crimes per se, in the disaster, not specifically post-disaster, situations was made by C. S. Frederick through his scholarly research paper presented to the WHO Working Group on the Psychosocial Consequences of Violence, at the Hague.¹³ The basic theme of the paper was an analysis of the occurrence of violence in times of disaster with the objective of finding out the short-term and long-term consequences for the victims of the disaster. It was a psychological study of the consequences of violence in the times of disaster. The study concluded that disaster situations were in themselves the traumatic experiences and the incidents of violence during the post-disaster period resulted into various horrific short-term and long-term consequences for the victims which affected not only their physical survival but also induced a variety of psychological and social dislocations in their life well after many years of the disaster.

Another study that looks into the issues of post-disaster period in the life of the sufferers of disaster is B. Raphael's *When Disaster Strikes*.¹⁴ Though not written with the exclusive emphasis on the violent crimes in the post-disaster period, the book examines the problems faced by the people during the post-disaster period and relates the incidents of crime as a result of the disruptions brought about by disaster in the life of the people.

The paper by R. Srinivas Murthy¹⁵ ponders over the issues involved in psycho-social consequences of disasters. It argues that whether disasters impact more when they occur or after may be debatable, but what is not is that victims need emotional support as much as physical help. The paper laments that in case of disasters, the immediate reactions centre on the disaster's physical explicitness and there is high level, if not complete, neglect of the disaster syndrome characterized by exposure to extreme danger, witnessing kin folk deaths, helplessness, hopelessness and the trauma of having to choose between one's survival and that of others. The most prominent psychiatric disorder in a disaster situation is known as Post-Traumatic Stress Disorder (PTSD) which is seen as a pervasive, developed and /or a protracted response to a catastrophe and whose commonest manifestation is in the form of grief. The paper also points out the unmitigated stress which disasters place on both professional and non-professional rescuers. It brings out certain mental and health initiatives to overcome the psychosocial consequences of disasters. Disaster's propensity to dehumanize the majority of population was discerned from the manner they treated the impactees, which could have been a part of the process of marginalization of the poor.

The prevention and management of the psychosocial consequences of disasters are dealt with in a publication of the World Health Organization.¹⁶ Defining a disaster as severe disruption – ecological and psychological both- which greatly exceeds the coping capacity of the impactee, the monograph comprehensively

reviews the issues involved in terms of magnitude, dimension, processes and possible interventions. Arguing that the concept of disaster has changed over time and varies among different cultures, the monograph points out the psychosocial coping depends on a variety of factors like the ability of victims to adjust psychologically, the capacity of community structures to adapt to crises and the help available.

However, none of the above-mentioned studies dwell upon the subject of violent crimes in the post-disaster period. Barring the study of Frederick, no study has been made on the topic of criminal tendencies during the post-disaster period. Hence, it would be pertinent in the times of increasing frequency of disaster, to correlate the theme of violent crimes in the post-disaster period, to find out the causes and remedies to minimize, if not completely eliminate, the phenomena of violent crimes in the post-disaster period.

CASE-STUDIES

In this section, two case studies have been provided to bring out succinctly the issues involved in the incidents of violent crimes in post-disaster period in two different socio-economic milieus. The case study of the Hurricane Katrina is situated in the Louisiana state of the United States whereas the case study of the Kashmir Earthquake is positioned in the Kashmir region spreading over the borders of India and Pakistan.

HURRICANE KATRINA (NEW ORLEANS, USA, AUGUST-SEPTEMBER, 2005)

A tropical storm, named Hurricane Katrina, of the magnitude of category 5 advanced towards the New Orleans in Louisiana State of America on 29 August 2005. Under the severe impact of the terrific hurricane, by 31 August, two levees broke and sent water coursing down the streets of the Big Easy. An estimated eighty percent of the below sea level city was under water, up to twenty feet deep in places with miles and miles of homes swamped. Later the same day, the levee pump failed and there was a second flood in New Orleans. On 1 September, bodies floated through the streets of New Orleans. Thousands were predicted dead, one million people were estimated to become homeless. Even after one week passed since Hurricane Katrina devastated New Orleans, there was no sign of a coordinated military action to provide relief to the victims. The provisions for shelter, water, food, medical assistance etc. were precarious in the post-disaster period.¹⁷

Once the first warning regarding the impending deluge to hit New Orleans was issued, those who had the money and the means were evacuated. But the poor, the elderly and the infirm were either forced to stay put wherever they were or sought shelter at the New Orleans Super-dome. This Super-dome, once a mighty testament to architecture and ingenuity, turned into the city's biggest storm shelter the day before Katrina's arrival on 29 August. About sixteen thousand people affected by the flood moved in. But within a span of 24 hours, this shelter had turned into a living nightmare. By 2 September, New Orleans was a picture of anarchy.

The post-disaster relief operations in the case of the Hurricane Katrina bore testimony to one of the most pathetic scenes. According to a Los Angeles Times¹⁸ report, a two year old girl slept in a pool of urine. Crack vials littered a restroom while blood-stained walls stood testimony to the disaster, next to vending machines smashed by the teenagers. In these situations, at least two people including a child had been raped by then. Similarly, a man jumped fifty feet to his death saying he had nothing to live for.

The post-disaster phase of the Hurricane Katrina was marked by a feeling among the people that the disaster was the result of a calculated passive strike on an impoverished and economically disenfranchised ethnic people. Moreover, five days after disaster struck, around ten thousand victims, who on the order of the National Guard Troops, headed towards Crescent City Connection Bridge to wait for buses to be transported out of the area, were kept waiting for three days and nights. They had no food, no water and no medicine for three days till the National Guard drove over the bridge above them, toasting out supplies over the side, crashing down to the ground below. Much of the supplies were destroyed from the drop. But any attempt to flag down the police resulted into being flagged down at gunpoint. Hours and buses passed by filled with people from other areas. Consequently tension ran high, resulting in murder, fights and some dead bodies stored in a freezer in the area.¹⁹

A discerning analysis of the violent crimes in the post-Hurricane Katrina in New Orleans brings out a typical perspective on the violent crimes in post-disaster period. Barring the incident of rape which exposes the perverted mindset of the criminal, aided by the propitious ambience at the time, other violent criminal acts like damaging the public property by smashing them, murder, fight resulting into injuries etc. were instantaneous responses of the sufferers of not only natural disaster but also of governmental apathy evident in the callous attitude towards the relief operations in the post-disaster period. Thus, violent crimes in the post-disaster period might be the outcome of the frustration of the victims of the disaster with the post-disaster response of the public agencies and institutions.

KASHMIR EARTHQUAKE (KASHMIR, INDIA-PAKISTAN, 8 OCTOBER, 2005)

An earthquake of the magnitude of 7.6 on the Richter scale shook the areas lying in northern India, Pakistan and Afghanistan on 8th October 2005, causing colossal loss of life and property. The strongest tremor to take place in a span of 120 years, it was epicentered at Muzaffarabad, the capital of the Pak- Occupied Kashmir (POK). The resultant losses due to the earthquake were multiplied due to the mountainous and rugged terrain of the region. In the wake of the tremor, concomitant landslides blocked the pathways and uprooted the poles of electricity and telecommunications. Most of the habitats of the people in the severely affected areas like Uri, Baramulla, Tangdhar, Muzaffarabad etc. crumbled causing death to scores of people under their debris.²⁰ The rescue operations in the affected areas were hampered by the inclement weather and chilling winter conditions prevalent in the region. The army and paramilitary forces, stationed in the areas also suffered heavily. After the initial hiccups, rescue and relief operations could be put in place.

The mammoth devastation caused by the earthquake in Kashmir was met with generous announcements of relief supplies from all parts of the world without any delay. However, the announcements of massive relief supplies did not reach people even after a couple of days leading the people to become relief vigilantes. Assuming that relief supplies sent for them was not reaching them, they put up barricades on the main roads to stop and check every vehicle that passed by to find out whether the relief supplies were being smuggled out. In Muzaffarabad, survivors swamped on relief trucks and beat up the delivery workers. The people also contemplated to kill government officials if some were to be found there. These circumstances led the administration to redirect the police from rescue operations to law and order maintenance with people scuffling for aid.²¹

Another set of violent bitterness was reported from the Tangdhar region of Kashmir. The flood of aid entering the Tangdhar Mountains had created new fissures among the communities of the region- communities which until the aid deluge that followed the earthquake had little of worth to fight over. Bitter resentment had developed between the villages close to the major relief centers and those further away; between the affluent who had secured access to aid and those from poorer backgrounds; between families whose numbers had died and those suffered damage only to property. The resentment ultimately led to fight breaking out between the sarpanch and his detractors resulting in injuries to three.²²

Incidents of criminal activities were also reported from the North West Frontier Province of Pakistan in the post-disaster period of the October earthquake. It was found that in the chaos of emergency, some relief aid was falling into the wrong hands. In Manshera town of the NWFP, one of the main relief hubs for the province, police had arrested over 350 people for either stealing relief supplies or lining up to receive help more than once. Somewhat similar charges were also made against the government officials for hoarding relief aid.²³ It was also alleged that some aid was also being allocated on political as well as partisan grounds. In some cases, attempts had also been made by the tribal groups to rob the relief materials. All such incidents not only hampered the relief supplies being provided to the needy people but the tendency on the part of certain people to commit violent crimes in the post-disaster relief operations.

When we look at the incidents of violent crimes in the post-disaster period in case of Kashmir earthquake, contrary revelations are made in comparison to the state of things in the case of Hurricane Katrina. While the

post-disaster period in case of Hurricane Katrina was marked by total apathy on the part of the government and other public agencies and institutions, thereby instigating people to take law into their own hands, in case of the Kashmir earthquake, it was the mismanagement of the relief materials received which led the people to become restless. Similarly, in the former case, if it was the deficiency of the relief supplies that led the people to indulge into activities like damaging public property, murder and suicides, in the latter case, it was the problem of plenty that made officials complacent in the handling of relief operations thereby incurring public wrath. Thus, while in the case of the Hurricane Katrina, the violent crimes in post-disaster period were borne out of despair and helplessness amongst the survivors which led them to articulate their annoyance in individual acts of rape, damage to property, murder and violence; in the case of the Kashmir Earthquake, the violent crimes in the post-disaster period were not committed by an individual but by a group of people reflecting the dissatisfaction of a whole community or a group of people. In other words, the violent crimes in case of the Hurricane Katrina were individually carried out whereas in case of the Kashmir earthquake it was the community that was in the forefront of committing violent crimes in the post-disaster period.

CAUSES OF THE VIOLENT CRIMES IN POST- DISASTER PERIOD

The causal phenomena of the occurrence of the violent crimes in the post disaster period may be contextualized by taking the congregation of the victims in relief centers as a particular type of social setting in which the deviant behavior of a few people results into criminal acts. In fact, the social situation is made up of those stimuli which have special relation with each and which operate as a unit. These stimuli sometimes so impinge upon the individual that they result in deviant behavior.²⁴

A number of studies have been made to evolve theories that can explain the causality of crime which have been classified by Martin and Fitzpatrick²⁵ into four major streams i.e. theories which seek the cause in the social system; theories that explain crime in terms of the defects in the operating environment; theories which put stress on the role of family; and the theories that relate the cause of crime only in the individual. However as Cyril Bart²⁶ pointed out that crime is not attributable to a single universal source, nor yet to two or three, it springs from an array and usually a multiplicity of alternatives and converging influences. Thus, to David Abrahamsen,²⁷ criminal act of a person is the sum total of a person's criminal tendencies adding up with his total situation, divided by his mental and emotional resistance to temptation. In analyzing the causes of the violent crimes in post-disaster period we, therefore, have to conceptualize the attributes that result into such a behavior.

Apart from the theoretical postulates on the etiology of violent crimes, a government publication in India tries to find out the motives for various crimes on the basis of the empirical data collected annually in the country. Thus, while delineating the motives for murder, the document gives prominence to the factors like personal vendetta or enmity and property disputes constituting 13.5% and 8.8% respectively. Other significant causes of murder include casteism (Bihar), terrorism or extremist violence (Jammu and Kashmir) and witchcraft (Orissa). Similarly, the document points out that victims of kidnapping and abduction fell to the criminals for the purposes of adoption , begging, camel racing, marriage, prostitution, ransom, revenge and for sale, slavery and others.²⁸

Now keeping in mind the theoretical and empirical postulates regarding the etiology of crime, we can discern certain general causation of the incidents of violent crimes in post-disaster period. In situations, when the response of the agencies in the post-disaster period is not proper and adequate, it results into great frustration in the minds of the people concerned. Coupled with the mammoth scale of destruction, the lukewarm response in the post- disaster period, leads to articulation of the people's hopelessness in suicides, damage to public property and sometimes violent protests on the streets. In other words, the shock and agony of the victims in the post-disaster period put the sufferers in a state of nervousness and melancholy, which when instigated by the apathy and callous response of the public authorities, leads to a high degree of frustration.

In general, two perspectives can be evolved on the causation of violent crimes in the post-disaster period: community perspective and the individual perspective. The basic underlying theme of the community perspective lies in the general public feeling discriminated and cheated in the aftermath of the disaster as a result of which the move for revengeful acts get into motion. In such cases, people at large feel that the public officials and agencies are not forthcoming to provide them adequate help and care which fosters in them a feeling of depression and revenge. The incidents in the post-Hurricane Katrina in the New Orleans, US, amply prove the point that people in disaffection and disenchantment with authorities look up to various kinds of violent crimes including damaging public properties.

The individualistic perspective on the violent crime in post-disaster period refers to the causation of crime at individual levels. As was evident in the case of the Kashmir earthquake, most of the violent crimes were due to two persuasions – proactive and reactive. The proactive persuasions may be taken as those persuasions which inspired the criminal to take undue advantage of the situations and design and execute plans and programmes for committing crime. When the people are in a state of shock and despair, the perverted mindset may lead to a criminal to rape an unsuspecting and helpless woman. Similarly, attempts at robbing and stealing relief supplies from the unsafe storage facilities are another set of violent crimes which are proactively born in the mind of the culprit.

In the reactive persuasion of the violent crime in the post-disaster period, the root cause of the crime lies in responding to a particular situation. In cases when the relief supplies lie dumped for quite some time without being distributed properly, the people are provoked to loot such godowns. Similarly, when any kind of irregularity or discrimination is noticed by the people, violent reactions take place in terms of murdering the concerned officials or causing physical injury to him. Abduction can be another way of taking revenge from the branded officials.

In sum, the causation of the violent crimes in the post-disaster period lies not in one but a multiplicity of functions. Though, most of the times, violent crimes are committed by the individuals due to their own personal grievance-led frustration or to take undue advantage of the propitious circumstances, sometimes community as a whole also rises in revolt to inflict harm on the public servants and agencies.

REMEDIAL MEASURES

The analyses of the causes and consequences of the violent crimes in the post-disaster period lead us to visualize certain remedial course of actions to ward off the possibility of occurrence of such crimes in such situations. The menace of violent crimes in the post-period may be tackled through a three pronged strategy. Firstly, utmost efforts need to be made to eliminate the causes that lead to community-based violent crimes. Secondly, in order to minimize the individual level violent crimes, appropriate psychological counseling should be provided with on the one hand and stern deterrent actions should be visualized for those found indulging in deliberate acts of violent crimes like rape etc., on the other. Finally, in the post-disaster period, along with the efforts for relief operations, minimum credible level of law and order should be maintained with the involvement of the civil defense personnel.

At the very outset, the public agencies need to be very careful in organizing the rescue and relief operations in the post-disaster period. Since the disaster makes no distinction amongst the victims on any ground whatsoever, the resultant impact of the event is thoroughly devastating for all concerned. In such case, the response of the public authorities needs to be uniform without any subjective discrimination among the survivors.

Some times, the discrimination based on the factors like regional considerations, racial factor or the socio-economic profile of the people instigates them to feel depressed whose reflection is found in the occurrence of violent crimes. Hence, what is of utmost importance is the just, equitable and non-discriminatory approach in organizing and conducting the relief operations in the post-disaster period so that the people may be saved from harbouring any community-based grudge whole inevitable articulation would be in terms of the violent crimes against the public officials and properties in the most, if not all, of the cases.

In the aftermath of a disaster when devastation is so comprehensive and non-discriminatory, nothing remains for the survivors to pin their hope upon. This situation is characterized by what is known as PDTS. Marked by a deep sense of grief and hopelessness, this situation leads the people to commit various types of violent crimes including committing suicides. In these situations, the most effective remedial measure would be to hold psycho-social counseling sessions so that the survivors may be brought out of the state of deep grief and a new vision or perspective of life may be provided to them. Such counseling sessions would, probably, prove to be quite effective in helping the survivors cope up with the trauma of disaster and carry on to live a normal life.

In the post-disaster period, when a lot of people tend to suffer from the PDTS, a few unscrupulous individuals are at playing tricks, taking undue advantage of the situation. The schemes of rape, robbery, abduction etc. are likely to be designed and executed by such people. The only way to deal with such errant individuals is to take strict deterrent action against those found indulging in such activities.

Finally, the maintenance of the law and order becomes the first casualty in the post-disaster period in the wake of the all out efforts at initiating the rescue and relief operations. Not only the armed forces are asked to shoulder the onerous responsibility of saving lives and providing relief to the people, but even the local police and other para-military forces are also pressed into the service of manning the relief operations. In such an eventuality, the field is wide open for the anti-social elements to have a field day and perpetrate various types of the violent crimes. Hence, in the post-disaster period, there is the need to keep a minimum of police and para-military forces on the law and order maintenance duties. The availability of adequate number of police and para-military forces may be augmented with the officials of the home guard and civil defense. Thus, pooling of efforts from various quarters may help in averting the causation of violent crimes in the post-disaster period.

The avoidance of violent crimes in the post-disaster period is, thus, a package deal whereby both proactive and reactive measures would be required to meet the challenge. The public agencies and the officials would have to maintain an utmost degree of impartiality, equitability and sufficiency of the relief supplies along with the proper management and distribution of the same. At the same time, the people who have lost their everything and are suffering from the PDTS syndrome need to be provided with active counseling so that they are brought back to the enticements of the worldly life and thus deviant behaviour on the part of such people may be avoided. An iron hand with those indulging in deliberate acts of violent crimes along with the minimum required level of the law and order machinery would be the supplementary endeavour to overcome the menace of violent crimes in the post-disaster period.

CONCLUDING OBSERVATIONS

Apparently, the violent crimes in the post-disaster period appears to be a paradoxical phenomenon owing to the fact that the occurrence of such crimes is associated with some sort of charged and tumultuous environment whereas the post-disaster period is considered to be the phase of grief and bereavement when people mourn the loss of lives and property in a tranquil and monotonous ambience which does not permit any sort of charged, revengeful and violent activities. In reality, however, the situations appear, to be totally different in the sense that quite often, if not always, the post-disaster period is marked by one or the other types of violent crimes. When we try to co-relate the occurrence of violent crimes with their causal factors in the post-disaster period, it comes out quite clearly that situational factors are behind such incidents of crime. Generally, in times of disaster, the common people are in state of shock and awe, and to tide over the situation, they wish to have active assistance and support of the public agencies and officials. However, in times when such support and assistance are not forthcoming, or there appears some degree of mismanagement in the relief operations, or there comes up some community based discrimination on the part of the people involved in the relief operations, they invariably lead to some sort of reaction from the victims that sometimes take the shape of violent crimes. In such situations, the most urgent need seems to be the streamlining of the relief operations to make people understand the difficulty in undertaking such operations and persuade them to bear with the people involved in the relief operations in the post-disaster period.

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DENIAL OF WOMEN'S HUMAN RIGHTS

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The 1993 United Nation's Conference on Human Rights held between 14th and 23rd June 1993 witnesses concern for women's issues, the issue of gender and gender violence. Demands are being made to recognize crimes against women as a violation of human rights requiring immediate attention. (*Human Rights Watch, 2005*).

The Governments, participated in the Fourth World Conference on Women, determined to advance the goals of equality, development and peace for all women everywhere in the interest of all humanity and ensure the full enjoyment by women and the girl child of all human rights and fundamental freedoms, and take effective action against violations of these rights and freedoms (*Beijing Declaration, 1995*). It is committed to prevent and eliminate all forms of violence against women and girls; Promote and protect all human rights of women and girls. Women's human rights include rights like right to life, the right to liberty and human dignity, and security of person, the right to freedom from torture or cruelty, inhuman or degrading treatment, the right to a home and family, the right to education and proper employment, the right to health care and everything that makes for a life with dignity.

But millions of women throughout the world still live in conditions of abject deprivation of, and attacks against, their fundamental human rights for no other reason than that they are women. (*Human Rights Watch, 2006*) Discrimination against women is deadly and women's rights are increasingly in danger around the globe. More women and girls die each day from various forms of gender-based discrimination and violence than from any other type of human rights abuse. (*Amnesty International, 1998*)

In India, women and girls confront discrimination and violence in practically every aspect of life. A strong preference for sons over daughters has led to sharply skewed gender ratios in several states. Sex-selective abortions, female foeticide, and inadequate provision of food and health care to girls has led to ratios of less than eight hundred women for every one thousand men in some places. Despite several legal provisions for gender equality, women still struggle to realize equal rights to property, and protection under the law. In short practically their rights are violated and broadly denial of women's human rights.

While causes, circumstances, and consequences vary from one country to another and from one culture to another, laws, stereotypes, and traditions greatly affect women as a group in all spheres of life, public and private. Governments have a responsibility to ensure that law and practice conforms to international standards, however ultimately discrimination will only end when all individuals make a personal commitment to make the rights enshrined in the UDHR a reality in the world - for everyone.

Objectives: This paper mainly focuses on women's human rights, its violation causes & consequences. How Practices of gender discrimination are harmful to the dignity and overall development of women. This paper also examines the legal framework in decisions related to gender justice that influence the human rights of women in India. Keeping in view the above scenario, this paper covers mainly following areas:

1. Nature and magnitude of the problem,
2. Causational factors working behind denial of women's human rights;
3. Consequences of violation of human rights;
4. Remedies & measures to minimize women's rights violation.

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Definition of key terms: Broadly in title “Denial of Women’s Human Rights” needs clarification of Denial and Women’s Human Rights. The latter term “Human Rights” may be defined as the rights relating to liberty, equality and dignity of the individual guaranteed by the Indian Constitution as embodied in the Fundamental Rights and the International Covenants. (*Human Rights Protection Act, 1993*). The former term “denial” means not allowing someone to have or do something. (*Cambridge Advanced Learner’s Dictionary, 2003*)

Methodology: To examine the above mentioned objectives, published official records, reports from Police Stations, information by un-structured interview of victim’s parents & family members have been relied upon. This study is based on both primary & secondary data. As already numerous studies are conducted in relation to gender discrimination at national and international level but gender studies in human rights context are very few. In this research a number of common issues and variables are focused upon. It seeks to investigate the nature, causes and consequences of women’s human right violation.

Nature & Magnitude of the Problem:

Opening the chapter on the subject of Denial of Women’s Human Rights the world’s females is like reaching at the doorstep of a gigantic gloomy hollow quivering with joint grief, but with the echo of disapproval throttled back to a buzz, and the mostly reactive approval of mal adjustment.

Looking through the lens of human rights, there are three major rights of denial against women in India: liberty, equality and dignity.

In spite of various principles enshrined in the constitution supported by a number of laws to safeguard the rights of women, the incidence of crimes, such as rape, dowry deaths, molestation, wife-beating etc. terror of violence suppresses the aspirations of all women. girl infanticide and sex-selective abortions are additional forms of violence that reflect the diminishing of females in Indian society In India crime against women is steadily on the rise. *see table no.1* A total of 1,55,553 incidents of crime against women (both under IPC and SLL) were reported in the country during 2005 as compared to 1,54,333 during 2004 recording marginal increase of 0.8% only during 2005. As compared to 2001, these crimes had reported decline during 2002 and 2003 with 1,43,034 and 1,40,601 cases followed by an increase during 2004 and 2005. Andhra Pradesh, accounting for nearly 7.2 per cent of the country’s population, has accounted for 13.4% of total incidents of crime against women in the country by reporting 20,819 cases. Uttar Pradesh, with nearly 16.4% share of country’s population has accounted for 9.6% of total crime against women by reporting 14,875 cases during the year. (*Crime in India-2005*)

Table -1
Crime against Women in India

Sl.No.	Crime Head	2001	2002	2003	2004	2005
1.	Rape (Sec. 376 IPC)	16075	16373	15847	18233	18359
2.	Kidnapping & Abduction (Sec. 363 to 373 IPC)	14645	14506	13296	15578	15750
3.	Dowry Death (Sec. 302/304B IPC)	6851	6822	6208	7026	6787
4.	Torture (Sec. 498A IPC)	49170	49237	50703	58121	58319
5.	Molestation (Sec. 354 IPC)	34124	33943	32939	34567	34175
6.	Sexual Harassment (Sec. 509 IPC)	9746	10155	12325	10001	9984
7.	Importation of Girls (Sec. 366-B IPC)	114	76	46	89	149
8.	Sati Prevention Act, 1987	0	0	0	0	1
9.	Immoral Traffic (P) Act, 1956	8796	6598	5510	5748	5908
10.	Indecent Rep. of Women (P) Act, 1986	1052	2508	1043	1378	2917
11.	Dowry Prohibition Act, 1961	3222	2816	2684	3592	3204

Source: Crime in India-2005

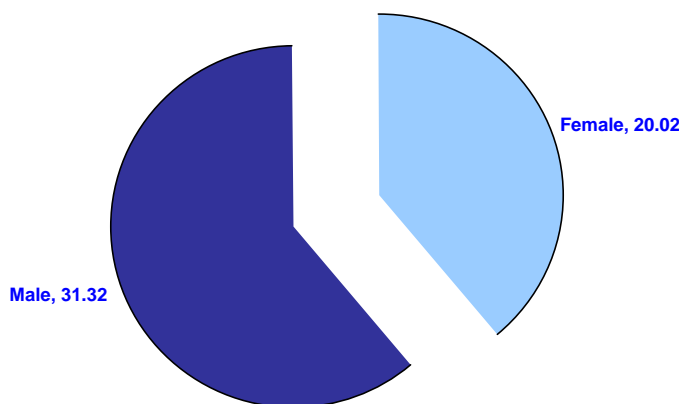
Data revealed that In India, Women were beaten in their homes by intimate partners; raped and otherwise sexually assaulted by outside the home, mistreated by in-laws for their greed, abducted by strangers or by the relatives and targeted for sexual violence based on their low social status.

Health: While women are guaranteed equality under the constitution, legal protection has little effect in the face of prevailing patriarchal traditions. (Carol S. Coonrod, 1998). Women health issues abound with the evidence of the disadvantaged status of women relative to men.

All people have a fundamental right to health, which the World Health Organization (WHO) defines not just as the absence of disease but as a state of complete physical, mental and social well-being. Unfortunately, around the world gender-based discrimination interferes with many women's ability to exercise these and other sexual and reproductive rights. For example, discrimination in education deprives many women of information they need to prevent unwanted pregnancy. Further, social constraints commonly prevent women from speaking openly about sexuality and contraception, resulting in little demand for better or more accessible services. (IPAS, 1998-2006) Anaemia is widespread among Indian women and affects between 50% and 90% of pregnant women. The neglect of the 28-year-old National Nutritional Anaemia Prophylaxis Programme is "essentially a serious breach of national responsibility, cutting the very roots of basic human rights to life, and good physical and mental health. (Kochupillai N, 1998)

AIDS is also a gender issue because women and girls bear a disproportionate and increasing share of the suffering caused by the epidemic. Gender and AIDS are tangled in much deeper ways, since gender differences, and particularly the subordinate position of women in most societies, increased risk for both men and women. Following table gives the distribution of the HIV burden by HIV epidemic sex and vulnerable groups. (See figure no. 1)

Figure No.1
HIV Infected Population



Source: HIV Estimates - 2004

Women living with AIDS confront not only stigma, but also the deprivations caused by violations of their rights. Relative to the scale and severity of these abuses, laws, policies, and programs to combat HIV/AIDS by protecting the rights of women and girls are negligible.

Education: Women and girls receive far less education than men; due both to social norms and prevailing discrimination. India has the largest population of non-school-going working girls. The literacy rate in the country is 65.38 per cent, 75.85 for males and 54.16 for females. (India- 2004) The steady improvement in literacy is apparent from Table no.2

Table no.2
LITERACY RATE: 1951- 2001

Census Year	Males	Females
1951	27.16	8.86
1961	40.40	15.35
1971	45.96	21.97
1981	56.38	29.76
1991	64.13	39.29
2001	75.85	54.16

(Source: Census of India- 2001)

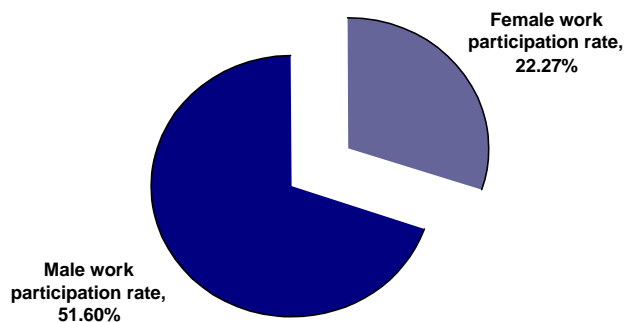
Despite widespread agreement that all people have the fundamental human right to education, 100 million children, at least 60% of them girls, do not have access to primary education. 960 million adults in the world are illiterate, and more than two-thirds of them are women. Women and girls continue to face discrimination at all levels of education, a fact which poses tremendous obstacles to their advancement.

Professional Inequality:

The employment situation in India, as revealed by the study of available data, suggests the presence of discrimination against women at all levels. Labour Force Participation Rates (LFPRs) are lower for women than for men, the disparity being particularly high in urban areas. In Mumbai, LFPR for women was 10.7%, as against 53.7% for men in 1991 (*Deshpande and Deshpande 1992*). This disparity is a source of some concern, for high labour participation rates for women have been shown to raise nutrition levels for their children, lower mortality rates and raise sex ratios by combating traditional male biases (*Agnihotri 1997*).

“In terms of skill development, women are impeded by their lack of mobility, low literacy levels and prejudiced attitudes toward women. When women negotiate with banks and government officials, they are often ostracized by other men and women in their community. Government and bank officials have preconceived ideas of what women are capable of, and stereotypes of what is considered women’s work.” “There is a popular notion among many employers who feel that the men have a greater responsibility in supporting the family than the women and therefore have a greater right to the job.” (*BertaEsteve-Volart, 2004,*) Regarding female work participation rate data reveals that the participation is only 22.27% in comparison to male work participation which is 51.60%. (*CEDAW; India’s first report, Part – I*)

Figure No.2
Statistical Overview of Women’s Status

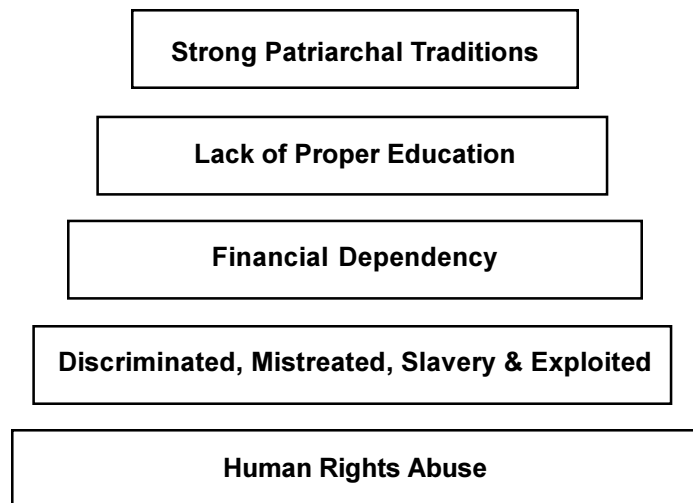


(Source: Convention on elimination of all forms of discrimination against women (CEDAW); India’s first report, Part – I, Basic general information and frame work)

Causes: In spite of various laws and legislative measures the Government is often unable to enforce these laws, especially in India where traditions are deeply rooted. Gender discrimination is grounded on the imposition of discriminatory social, cultural, or religious norms, and the absence of protection afforded by the state authorities to women and girls. In spite of this other contributing factors to denial of women's human rights includes:

Social Factors: Traditional mal-social practices and patriarchal codes and beliefs are mainly responsible factors for denial of women's human rights. Gender-specific socialization and Gender discrimination throughout the life cycle of women derives essentially from cultural patterns, in particular the harmful effects of certain traditional or customary practices perpetuate the lower status accorded to women in the family, the workplace, the community and society. The roots of discrimination against women also lie in the religious and cultural practices of India. See Figure No.3

Figure No.3
GRASS ROOT CAUSES OF VIOLATION OF WOMEN'S HUMAN RIGHTS



Economic factors: Many abuses are rooted in women's social and economic powerlessness and limited access to cash and credit. Continuous subordination of women in every sphere of her life as reflected in economic, educational, and work opportunity and disparities between men and women.

Legal factors: Legal status of women is less significant by written law and/or by put into practice makes women immune to violation of their rights. Law concerning divorce, child keeping, maintenance and legacy need to be improved. Legal definitions of rape and domestic abuse. Low levels of legal literacy among women and insensitive treatment of women and girls by police and judiciary In addition to this inadequacy of law enforcement and lack of legal awareness hampers efforts to fight for women's human rights protection.

Political factors: Under-representation of women in power, politics and the media and in the legal and medical professions and Domestic violence not taken seriously still notions of family being private and beyond control of the State. (Lori Heise, 1994, pp.1165-1170) Inadequate organization of women as a political force, partial participation of women in organized political system is also a leading cause of denial of women's human rights.

Human rights violations against women are often rooted in discrimination. Because of their unequal status in many societies, economic and social development, health conditions and criminal activities often have a disproportionate impact on women.

Consequences of Human Rights Violation: It is needed to address the effects of long-standing and pervasive discrimination against women. As a result of this discrimination, women and girls are still the poorest, least educated, most unhealthy, and most marginalized segment of the world's population. Women lack control of economic assets and often lack of opportunities for education and training. These factors intensify women's poverty, heighten their vulnerability to violence, increase their health risks, and undermine their human rights. (CEDAW, 2002) The abuse of women in conflict was rooted in the persistent human rights violations that pushed women into a lower status with limited rights in all spheres of their lives, from home to work. Many countries continued to deny women's equality.

Violence against women is an obstacle to the achievement of the objectives of equality, development and peace. Violence against women both violates and impairs or nullifies the enjoyment by women of their human rights and fundamental freedoms. Inequality retards not only the advancement of women but the progress of civilization itself. The persistent denial of equality to one-half of the world's population is an affront to human dignity. It promotes destructive attitudes and habits in women that pass from the family to the work place, to political life, and ultimately to international relations. (United States; 1997)

There are many social, economic and political situations that render people insecure, homeless and without a sustainable source of livelihood. To reiterate, women are particularly vulnerable given the low socioeconomic status accorded to them. Lack of access to and control over land, housing and property constitutes a violation of human rights and contributes significantly to women's increasing poverty. (WOMEN AND HOUSING RIGHTS – A LEGAL OVERVIEW, 2006, pp, 1 -5)

Similarly the link between powerlessness and the risk of exposure to HIV provides the key to understanding the source of women's vulnerability to HIV infection. It is the reason why HIV infection is increasingly a condition of all women, regardless of race, colour or economic status. (Julie Hamblin & Elizabeth Reid, May 1991, Issues Paper No. 8) It is violation of women's basic human rights to safety, security and life without discrimination.

The off-putting consequences of neglect extend beyond women's sexual and reproductive health to their overall health, the welfare of their children, and even the economic and social fabric of nations. By sapping women's liveliness, discouraging their confidence, and concealing their health, gender violence deprives society of women's full participation. Violence against women deprives society economically, politically and culturally, by limiting the active role that women can make in the development of their community. Violence against women constitutes a violation of the human rights and fundamental freedoms of women and also violence against women impairs or nullifies their enjoyment of those rights and freedoms.

Discrimination against women violates the principle of equality of rights and respect for human dignity. It is an obstacle to the participation of women on equal term with men in political, social, economic and cultural life of their countries hampers.

The internationally-agreed upon Millennium Development Goals, (United Nations Millennium Summit, 2000) cannot be achieved without eliminating discrimination against women and facilitating their full participation in all aspects of the economic, social, political, and cultural life of their communities and nations. We now have countless examples of development efforts gone wrong because they failed to involve women and to take into account women's roles, experiences, and perspectives. (ICRW, 2002, pp-2)

Remedial Measures: Even India has much to celebrate. There have been huge expansions in mainstream participation, with transformation in the gender profiles at the grassroots. Despite many obstacles, women continue to make essential contributions not only to their own households, but also to their communities and societies. International conventions and treaties prior to CEDAW failed to address the specific ways in which women are prevented from realizing their full human rights. Many of these barriers are codified in statutory or customary law, reflecting official sanction for, or acceptance of, women's second class status. The internationally-agreed

upon Millennium Development Goals (*The Millennium Development Goals, 2000*) cannot be achieved without eliminating discrimination against women and facilitating their full participation in all aspects of the economic, social, political, and cultural life of their communities and nations.

Social Support: A women's exploitation mainly depends on society's attitude. In Vedic period of India women enjoyed all sort of support of society. With this support she had a good status in society. But due to changes in attitude of society day by day her position becomes miserable. Once again society has to change its attitude and has to adopt a new supportive attitude so once again women may come in mainstream of society, because the road to a justice is long one involving time, financial expenditure and plenty of courage. During the time when the woman is engaged in her struggle against violence she needs support in the form of a shelter, legal guidance, medical services and emotional support. These services, collectively known as social support, go a long way in assisting a victim of violence in her fight for justice.

Need to Sensitize: Women themselves are not aware regarding their human rights, consequence of this for millions of women was that they lived with daily violence and discrimination from infancy to old age. The universality of women's rights, and the indivisibility of those rights, for all practical purposes, was for most women little more than a dream.

Role of NGOs: In this field, NGOs and other civil society organisations or professional associations, play a key role in advocating and monitoring faithfulness to, human rights standards and women's rights. Also state and national level NGOs can take idea of the working of international women's NGOs such as Madre, which are active to address human rights issues through support of grassroots organisations and the implementation of practical programmes. Similarly the UK-based NGO Womankind Worldwide educates women on human rights issues through practical programmes within their "four literacies" model body literacy—building women's knowledge of their physical and mental health needs, addressing taboos and making decisions based on facts not fears; civil literacy—deepening understanding and knowledge of political and civil rights and promoting participation in decision-making; word literacy—supporting women's education, encouraging reading, writing and creativity; and money literacy—building numeric skills and understanding of basic economics and encouraging entrepreneurship. (*Naraghi, Anderlini and Shoemaker, 2006*)

Revitalization of Criminal Justice System: A change is essential in the methods adopted by criminal justice system with human right violation. A greater understanding of the position of women as victims of violence, adequate training and a sense of commitment are required on behalf of the police. Changes in the role and function of the Criminal Justice System are essential, but not sufficient, to ameliorate the condition of victims of violence. The road to a justice is long one involving time, financial expenditure and plenty of courage. During the time when the woman is engaged in her struggle against violence she needs support in the form of a shelter, legal guidance, medical services and emotional support, go a long way in assisting a victim of violence in her fight for justice.

Conclusion: Let us be a little bit honest to analyze the sickness by taking into thoughtfulness all the phases and objective in altered situation, conditions and environment. Only then we could have a perfect preparation to accomplish our esteemed aim that is empowerment of Indian women and could be capable to re-establish their human rights organize to bring her at similarity with other human beings. This could be attained only if society is able to blow up the traditional sick-minded attitude. It is a fight for freedom to be fully and completely human and equal without apology or permission. Ultimately, the struggle for women's human rights must be about making women's lives better everywhere all the time.

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POPULATION GENETICS OF 12 PCR – BASED DNA MARKERS AMONG PEOPLE OF HARYANA, INDIA

K. P. S. Kushwaha*, M. B. Rao**, Kamal Chauhan***

ABSTRACT

Indian populations have been extensively investigated for blood groups, serum proteins and red cell isozymes polymorphisms and various physical traits for discerning genetic diversities and to relate observed patterns of affinities with cultural, linguistic and demographic histories of the populations. With the advancement of molecular biology techniques, studies on genomic polymorphisms have been started on Indian populations during the last decade and data on various polymorphic DNA markers are being generated. This report presents base-line data on allele frequencies of 12 forensically significant DNA loci comprising 5 STRs (CSF1PO, TPOX, THO1, LPL, FESFPS), one VNTR locus D1S80 for 8 endogamous groups of Haryana (Rajput, Jat, Gujjar, Ahir, Charamgar, Balmiki, Khatri, Meo) and on HLADQ A1, LDLR, GYPA, HBGG, D7S8 and Gc for the Jat.

Key words : STRs; VNTRs; HLADQA 1; Poly Markers; Allele Frequencies, Haryana.

Introduction :

Blood groups, serum proteins and red cell isozymes polymorphisms and various physical traits have been extensively investigated in Indian populations for discerning genetic diversities and to relate observed patterns of affinities with cultural, linguistic and demographic histories of the populations (Bhasin et. al. 1992, 1994). With the advancement of molecular biology techniques, studies on genomic polymorphisms have also been started on Indian populations during the last decade and data on various polymorphic DNA markers are being generated.

In Haryana, a northernly state of India, although several studies have already been reported on blood groups, serum proteins, and isozyme polymorphisms (Kushwaha et. al., 1990a,b, 1992, Kushwaha and Chahal, 1989, 1991, 1994, 1996, Kushwaha and Rao, 1995, 1996). However, no study was carried out on DNA polymorphism. This study, planned through the DNA research project partially funded by the Department of Biotechnology, Govt. of India, and carried out at Forensic science Laboratory, Haryana during 1999-2003 reports base-line data on allele frequencies of 12 forensically significant DNA loci comprising 5 STRs (CSF1PO, TPOX, THO1, LPL, FESFPS), one VNTR locus D1S80 for 8 endogamous groups of Haryana (Rajput, Jat, Gujjar, Ahir, Charamgar, Balmiki, Khatri, Meo) alongwith data on HLADQ A1, LDLR, GYPA, HBGG, D7S8 and Gc for the Jat.

Material and Methods:

Population : Blood samples were collected from unrelated, healthy and consented subjects of both sexes hailing from eight endogamous groups viz. Jat, Rajput, Gujjar, Ahirs, Meo, Khatri, Charamgar and Balmiki of Haryana.

Extraction : DNA was extracted using organic extraction method, Wizard Genomic DNA Extraction Kit (Promega

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Corp. USA) and Genei Whole Blood DNA Extraction Kit (Bangalore Genei, Bangalore). Quality and quantity assessments were done using DNA Quant Flurometer and GeneQuant Pro RNA/DNA Calculator (Amersham Pharmacia Biotech, U.K.).

PCR : PCR amplification was performed using Primer kits for STRs (Promega, USA), AmpliFLP D1S80 PCR Amplification kit for DI S80 -VNTR locus and AmpliType HLADQA1 and Ampli Type PM PCR Amplification and typing kit (Perkin Elmer, USA) in Perkin Elmer Thermal Cycler PE 2400 following protocols recommended by the manufacturers.

Typing : Allelic strands of the amplified DNA loci of STRs and VNTR-D1S80 were separated through vertical polyacrylamide gel electrophoresis, and were detected after silver staining of the gels. Genotypes were recorded with the aid of allelic ladders run adjacent to the sample lanes. Alleles of HLADQA1 and Poly Maker loci LDLR, GYPA, HBGG, D7S8 and GC were recorded with reverse dot blot technique.

Analysis of Data : Allele frequencies at each locus were calculated by direct counting. Estimation of Hardy-Weinberg equilibrium was conducted using DNATYPE windows 95/NT (Chakraborty, et al., 1998), and additional summary statistics were calculated with PowerStats software PC version 95 (Promega, USA)

Results : Allele frequencies of five STR loci are presented in Tables 1a, 1b, and that of VNTR/D1S80 in Table 2. Table 3 presents the distribution of genotype and allele frequencies of HLA DQA1 and polymaker loci LDLR, GYPA, HBGG, D7S8 and GC. The studied populations were found in Hardy-Weinberg equilibrium at all the loci with few exceptions showing minor variations.

The pooled allele frequency data of all the 8 endogamous groups of Haryana were subjected to analysis for forensic evaluation. The forensic statistics for the 12 DNA loci in people of Haryana are summarized in Table 4 which demonstrates that STR, VNTR D1S80 and HLADQA1 markers are highly polymorphic with PIC ranging from 61.7 – 75.2 and thus are useful in forensic and paternity analysis.

Access to the data : Available upon request to : kpsingh11@yahoo.com

Other remarks : Since the knowledge of allele frequencies is an essential pre-requisite to the use of any human polymorphism in forensic work, forensic genetics need to direct their efforts to investigating and reporting genetic marker data on reference populations. (Lincon and Carracedo, 2000)

Acknowledgement :

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TABLE 1a: Allele frequencies of STR loci in eight endogamous groups of Haryana, India.

Locus	Allele	JAT N= 206	RAJPUT N=196	GUJJAR N=182	CHARAMGAR N=198	AHIR N=62	KHATRI N=64	BALMIKI N= 64	MEO N=96
CSF 1 PO	8	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.010
	9	0.039	0.020	0.055	0.020	0.032	0.048	0.031	0.021
	10	0.262	0.168	0.214	0.152	0.242	0.143	0.219	0.198
	11	0.291	0.311	0.379	0.338	0.194	0.310	0.234	0.250
	12	0.335	0.459	0.302	0.389	0.419	0.405	0.438	0.417
	13	0.049	0.031	0.033	0.081	0.113	0.083	0.047	0.094
	14	0.019	0.005	0.016	0.020	0.000	0.012	0.031	0.010
TPOX	7	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	8	0.437	0.372	0.346	0.364	0.403	0.429	0.438	0.490
	9	0.087	0.163	0.148	0.111	0.129	0.095	0.094	0.104
	10	0.097	0.020	0.077	0.111	0.032	0.071	0.047	0.063
	11	0.301	0.403	0.412	0.338	0.435	0.345	0.391	0.292
	12	0.058	0.041	0.016	0.076	0.000	0.048	0.031	0.052
	13	0.005	0.000	0.000	0.000	0.000	0.012	0.000	0.000
TH01	6	0.267	0.240	0.198	0.273	0.290	0.214	0.281	0.208
	7	0.223	0.168	0.231	0.202	0.161	0.202	0.172	0.146
	8	0.107	0.117	0.088	0.212	0.145	0.119	0.109	0.208
	9	0.238	0.337	0.319	0.182	0.177	0.238	0.203	0.271
	9.3	0.155	0.133	0.165	0.121	0.226	0.131	0.234	0.167
	10	0.010	0.005	0.000	0.010	0.000	0.095	0.000	0.000

N = No. of Chromosomes

Table 1b : Allele frequencies of STR loci in eight endogamous groups of Haryana, India.

Locus	Allele	JAT N=174	RAJPUT N=104	GUJJAR N=72	CHARAMGAR N=78	AHIR N=54	KHATRI N=80	BALMIKI N= 58	MEO N=90
LPL	9	0.029	0.010	0.014	0.000	0.037	0.038	0.000	0.022
	10	0.437	0.519	0.417	0.526	0.426	0.363	0.448	0.467
	11	0.287	0.154	0.222	0.256	0.204	0.300	0.310	0.100
	12	0.218	0.269	0.264	0.167	0.222	0.213	0.190	0.256
	13	0.029	0.048	0.069	0.051	0.111	0.063	0.052	0.133
	14	0.000	0.000	0.014	0.000	0.000	0.025	0.000	0.022
		N=234	N=100	N=58	N=60	N=32	N=72	N= 62	N=76
FESEPS	8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	9	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	10	0.265	0.220	0.259	0.100	0.094	0.236	0.145	0.132
	11	0.385	0.430	0.328	0.450	0.656	0.375	0.548	0.408
	12	0.261	0.220	0.328	0.283	0.188	0.292	0.210	0.250
	13	0.073	0.120	0.086	0.150	0.063	0.083	0.097	0.171
	14	0.000	0.010	0.000	0.000	0.000	0.014	0.000	0.039

N = No. of Chromosomes

TABLE 2 : Allele frequencies of VNTR - D1 S80 loci in eight endogamous groups of Haryana, India

Allele	JAT N= 74	RAJPUT N= 76	GUJJAR N=76	CHAMAR N=76	AHIR N=64	KHATRI N=74	BALMIKI N= 64	MEO N=72
15	0.000	0.000	0.000	0.013	0.000	0.000	0.000	0.000
16	0.027	0.000	0.026	0.066	0.031	0.041	0.078	0.028
17	0.041	0.000	0.000	0.013	0.000	0.014	0.000	0.000
18	0.324	0.355	0.237	0.263	0.266	0.432	0.391	0.278
19	0.014	0.013	0.013	0.000	0.016	0.000	0.000	0.000
20	0.000	0.000	0.000	0.013	0.000	0.000	0.016	0.000
21	0.014	0.026	0.013	0.013	0.016	0.000	0.016	0.014
22	0.014	0.013	0.039	0.013	0.000	0.027	0.063	0.083
23	0.014	0.000	0.000	0.013	0.031	0.000	0.016	0.000
24	0.311	0.329	0.395	0.303	0.250	0.243	0.219	0.375
25	0.041	0.079	0.039	0.105	0.063	0.027	0.016	0.014
26	0.014	0.000	0.000	0.013	0.063	0.000	0.016	0.028
27	0.014	0.079	0.000	0.000	0.031	0.000	0.000	0.000
28	0.027	0.013	0.118	0.066	0.094	0.041	0.078	0.056
29	0.041	0.000	0.039	0.026	0.016	0.068	0.000	0.014
30	0.000	0.053	0.013	0.013	0.016	0.041	0.031	0.000
31	0.054	0.000	0.053	0.039	0.047	0.027	0.063	0.069
32	0.000	0.013	0.013	0.013	0.016	0.014	0.000	0.014
36	0.027	0.013	0.000	0.000	0.000	0.000	0.000	0.000
37	0.000	0.000	0.000	0.000	0.000	0.014	0.000	0.000
38	0.000	0.000	0.000	0.013	0.000	0.000	0.000	0.000
39	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.000	0.000	0.016	0.000	0.000	0.000
41	0.014	0.013	0.000	0.000	0.031	0.014	0.000	0.028

N =No.ofChromosomes

Table 3 : Distribution of Genotypes and Allele frequencies for HLADQ A1 and Poly . Marker loci in Jat of Haryana, India

LOCUS	GENOTYPE	NO. OBS.(%)	NO. EXP. (%)	ALLELE FREQUENCIES
HLADQ A 1 N =42	1.1/1.2	4 (9.52)	1.928 (4.59)	1.1=0.190
	1.1/1.3	3 (7.14)	2.892 (6.88)	1.2=0.119
	1.1/2.0	1 (2.38)	0.771 (1.84)	1.3=0.179
	1.1/4.0	8 (19.05)	5.590 (13.31)	2.0=0.048
	1.2/1.2	2 (4.76)	0.542 (1.29)	3.0=0.119
	1.2/1.3	1 (2.38)	1.807 (4.30)	4.0=0.345
	1.2/2.0	1 (2.38)	0.482 (1.15)	
	1.3/1.3	1 (2.38)	1.265 (3.01)	
	1.3/3.0	2 (4.76)	1.807 (4.30)	
	1.3/4.0	7 (16.67)	5.241 (12.48)	
	2.0/3.0	1 (2.38)	0.482 (1.15)	
	2.0/4.0	1 (2.38)	1.398 (3.33)	
	3.0/4.0	7 (16.67)	3.494 (8.32)	
4.0/4.0	3 (7.14)	4.892 (11.65)		
Others	0 (0 .00)	9.410 (22.40)		
$\chi^2= 1.098, df = 1$				
LDLR N = 48	AA	8 (16.67)	6.632 (13.82)	LDLR *A =0.375
	AB	20 (41.67)	22.737 (47.37)	LDLR *B = 0.625
	BB	20 (41.67)	18.632 (38.82)	
$\chi^2= 0.626, df =1$				
GYPA N = 48	AA	23 (47.92)	21.895 (45.61)	GYPA *A = 0.677
	AB	19 (39.58)	21.211 (44.19)	GYPA*B = 0.323
	BB	6 (12.50)	4.895 (10.20)	
$\chi^2=0.413, df=1$				
HBGG N = 48	AA	12 25.00	10.895 (22.70)	HBGG *A= 0.479
	AB	22. 45.83	24.211 (50.44)	HBGG *B = 0.521
	AC	0(0.0)	0(0.0)	HBGG *C = 0.000
	BB	14 29.17	12.895 (26.86)	
	BC	0(0.0)	0(0.0)	
	CC	0 (0.0)	0(0.0)	
$\chi^2=0.407, df =1$				
D7S8 N = 48	AA	31(64.58)	30.800 (64.17)	D7S8 *A = 0.802
	AB	15 (31.25)	15.400 (32.08)	D7S8 *B = 0.198
	BB	2 (4.17)	1.800 (3.75)	
$\chi^2=0.0015, df =1$				
GC N = 48	AA	4(8.33)	4.579 (9.54)	GC *A = 0.313
	AB	3 (6.25)	3.158 (6.58)	GC *B = 0.104
	AC	19 (39.58)	17.684 (36.84)	GC *C = 0.583
	BB	2.(4.17)	0.474 (0.99)	
	BC	3(6.25)	5.895 (12.28)	
	CC	17(35 .42)	16.211 (33.77)	
$\chi^2 = 0.255, df=1$				

N =Number Tested

**Table 4 : Summary statistics for 12 DNA loci in
people of Haryana (pooled data)**

Locus	Hob	Hexp	ET	PD	PE	PIC
LPL	0.626	0.688	0.402	0.835	0.339	0.625
FESFPS	0.694	0.684	0.382	0.822	0.433	0.625
CSF1PO	0.723	0.714	0.344	0.848	0.480	0.655
TPOX	0.679	0.676	0.537	0.831	0.389	0.617
THO1	0.801	0.794	0.248	0.902	0.604	0.752
D1S80	0.792	0.793	0.460	0.904	0.584	0.752
HLADQA1	0.857	0.791	0.014	0.881	0.709	0.750
LDLR	0.417	0.474	0.513	0.625	0.124	0.360
GYPA	0.396	0.442	0.525	0.598	0.111	0.340
HBBG	0.458	0.504	0.594	0.642	0.154	0.370
D7S8	0.313	0.321	1.00	0.484	0.069	0.270
GC	0.521	0.557	0.142	0.701	0.206	0.480

Hobs = Observed Heterozygosity; Hexp = Expected Heterozygosity; ET = Exact Test; PD= Power Discrimination; PE= Power of Exclusion; PIC = Polymorphism Information Content.

ABUSES OF CONTROLLED SUBSTANCES – AN OVERVIEW

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ABSTRACT

The drugs of abuses of past and present generation or any substance that may be used in the production of narcotic drugs and psychotropic substance are known as controlled substances under the international terminology and listed in different schedules of Dangerous Drug Acts in the national and international level for regulating or controlling their illegal possession, transit, sale, distribution and processing in illegal clandestine laboratories of the under world.

These substance may be of natural, semi-synthetic and synthetic origin; and are very potent in their physiological actions viz. euphoria, sedation, depression, stimulation and hallucination developing dependence and withdrawal syndrome. The effective control of abuses is an international problem. In this paper the aspects of controlled substances have been discussed.

INTRODUCTION

The abuses of alcohol and plants for intoxication were known since ancient times. Plants of diverse geographical origin gradually distributed in different parts of the world and abuses started. The abuses became critical due to availability of simple methods for extraction of active components in plants or their further processing or synthesis for the same for new controlled substances. The changing pattern of abuses in different phases in some particular zones or whole of the world due to introduction of new compound is noteworthy. On occasions a particular controlled substance abused extensively is now outdated viz. LSD, methaqualone (Mandrax). The controlled substances are also manufactured in different forms viz. injection, tablet, micro dots on a cartoon or picture, powder etc. The method of applications are also varied viz. smoking, injection, chewing, inhalation etc.

The active components extracted directly from plants were used in the beginning as analgesic to relieve pain but found to develop dependence and intoxication of nervous system on prolonged use. Efforts were made to produce compounds with more potency but zero dependence by processing the extracted active components in plants. In this way morphine on acetylation gave diacetyl morphine (heroin) which was more potent and much abused. There were continuous attempts to synthesize compounds for specific applications. As a result various classes of controlled substances of much more potency could be synthesized from various precursors viz. phenyl-2-propanone for synthesis of amphetamine or 2 carbomethoxy tropinone for cocaine and piperidine for phenyclidine. In this way, the list of controlled substances became longer and provoked the under world to manufacture controlled substances already known or try synthesis of structurally related compounds. As a result, abuses became supercritical necessitating their control and legal measures.

CONTROLLED SUBSTANCES IN PLANTS

The plants include opium poppy or *Papaver somniferum* L. of Far East (containing mainly morphine, codeine, papaverine and narceine alkaloids as active components), Hemp or *Cannabis sativa* L. (containing active cannabinoids), South American *Erythroxylon Coca* L. (containing active cocaine), evergreen shrubb Khat or *Catha edulis* of East Africa and Southern Arabia (containing norephedrine as stimulant), Mexican *Psilocybe* mushroom or *Psilocybe mexicana* (containing active psilocin) and Mexican mescaline Cactus or *Lophophora williamsi* (containing active mescaline) and seeds of morning glory or tricolour *Ipomoea purpurea* or dried sclerotic of the parasite fungus *Claviceps purpurea* growing on rye (containing lysergic acid).

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The processes are now available to isolate or extract active or controlled substance in them naturally. The extracted components have also been processed chemically to give semi-synthetic controlled substances Viz. diacetyl morphine (heroin) from morphine and LSD from lysergic acid. At the same time various active compounds of close structural relationship or new moieties have also been synthesized as synthetic controlled substances from various precursors viz. amphetamine or their substituted products, benzodiazepines and tryptamin derivatives.

HISTORICAL PERSPECTIVES

The controlled substances had to be used in the forms of extracts of plants in the beginning. Pure morphine was isolated in 1805. Its use in injection syringe was started in 1855 and extensively used in the civil wars in the United States (1861 – 65) and in the Franco-German War (1870 – 71) Diacetylmorphine as a semi synthetic drug was synthesized in 1874 and came in the market in 1898 for sale under the name Heroin. The next drug of importance was amphetamine and found effective in the spoiling of appetite i.e. effective against obesity. The stimulating effects of amphetamine were known when it was abused by students. The derivative of amphetamine i.e. methamphetamine helped German troop to fight for days together. During 2nd world war a major abuse of amphetamine hit Japan. It again reappeared in Scandanavian countries in 1960. LSD was synthesized in 1943 but its epidemic outbreak occurred in Europe in 70's decade. Phencyclidine, a new anaesthetic appeared as veterinary medicine in 1958 under the name sernyl (a piperidine derivative) but outbreak of abuses occurred in USA in 1977. In 60's and 70's decade of the last millennium synthesized benzodiazepines and barbiturates were of great concern for their abuses. These were followed by the emergence of several synthetic controlled substances viz. phenethylamines (4 – bromo – 2, 5 – dimethoxy amphetamine; 2, 5 – dimethoxy amphetamine) and piperidine analogs (MPPP, MPTP, OPPP). Thus, it is clearly evident that various controlled substances emerged that led to abuses in diverse ways due to clandestine manufacture of such controlled substances.

CLASSIFICATION

The controlled substance may be classified on the basis of origin and pharmacological effects. The precursor chemicals, solvents, acids required for sythesis of controlled substances have now been included.

A. Classification on the Basis of Origin :

- | | |
|---------------------|---|
| Naturally Occurring | : Morphine, Codeine, Cocaine, Mescaline, Psilocybin /Psilocin |
| Semi Synthetic | : Heroin (diacetyl morphine), LSD. |
| Synthetic | : Barbiturates, Benzodiazepines, Amphe – tamine, Methadone, Meperidine. |

B. Classification on the Basis of Pharmacological Effects :

- | | |
|--------------------------|---|
| Narcotic Analgesics | : Interact with receptors in the brain responsible for transmission of and response to pain viz. opium alkaloids, heroin, diamorphine, methadone, pethidine. |
| CNS Stimulants | : Closely related to neurotransmitters such as dopamine and noradrenaline resulting increase in blood pressure, mental alert – ness and activity.
Viz. amphetamine, methamphetamine, cocaine, designer drugs, cathinone, khat. |
| Hypnotic / Tranquilizers | : CNS depressants
Viz. benzodiazepines, barbiturates and opiates. |
| Hallucinogens | : Produce visual and other sensory hallucinations viz. LSD, Phenylethylamines, derivative (mescaline), dimethyl tryptamine. |

- Miscellaneous : Hallucinogenic effects unlike LSD.
Viz. Ecstasy drugs.
- C. Precursor Chemicals Acids and Solvents : Chemicals required for synthesis.
(included as controlled substances) Viz. N-acetyl anthranilic acid, ergametrine, isosafrole, piperonal, potassium permanganate, ether, acetone, toluene, hydrochloric acid piperidine.

LEGISLATIVE PROVISION

There are various international and national legislative provisions for preventing abuses of controlled substances. The UN single convention on Narcotic Drugs '1961 provided rules for cultivation, manufacture and trade of plant based drugs and included over 100 synthetic substances mostly narcotic analgesic in four schedules. The convention of 1961 had to be modified due to abuses of stimulants, hallucinogens and related drugs. The new UN convention i.e. UN convention of Psychotropic Substances '1971 was intended to take care of psychotropic substances. These were (100 drugs) included in four schedules. However, none of the conventions took care of isomers for their control. As the scope of syntheses of controlled substances from precursors widened, it became necessary to control the availability of precursors, chemicals and solvents in the hands of clandestine laboratories. Thus, the UN convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances was adopted in 1988 to take care of illegal traffic of precursors, chemicals and solvents for monitoring the manufacture, use and domestic as well as international trade by adopting legislative, regulatory and administrative measures.

In India Narcotic Drugs and Psychotropic Substances Act. '85 takes care of controlled substances. Under Section 2(via) of the Act. Central Government in exercise of powers conferred upon it by Section 9A of the above Act had also issued an order called the Narcotic Drugs and Psychotropic Substances (Regulation of Controlled Substances) order '1993 which was effective on 15th April '1993. It deals with controlled over or regulation of manufacture, distribution, sale, imports, exports, transport, consumption etc. of precursor chemical (controlled substances).

Thus, the monitoring and checking aspects include analysis of seized samples as and when required to execute the provisions of the Act.

ANALYSIS

The seized samples are generally analyzed by Central Revenue Control Laboratory or Forensic Laboratory of state or central Government. The analysis related to controlled substances involve both qualitative detection and quantitation of active constituents in the seized samples. The methods involve spot tests, micro crystal tests, UV Spectroscopy, Chromatographic techniques (TLC, HPTLC, HPLC, GC) and hyphenated techniques viz. GC-MS, LC-MS, LC-FTIR etc. A constant updating and innovative methodologies are required to prevent abuses of controlled substances.

CONCLUSION

The abuses of controlled substances are the potential dangers to the international community. The production and trafficking are a big business. The effective control over the situation is of prime importance. At the same time common international programme for Crop. Control, interdiction, education, law environment, treatment and rehabilitation of victims should run in the co-ordinated manner.

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DETECTION AND IDENTIFICATION OF PSYCHOTROPIC SUBSTANCES LIKE XYLOCAINE, PHENARGEN AND ANXOL BY HPTLC METHOD – A CASE STUDY

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ABSTRACT

Psychotropic substances like Xylocaine, Phenargen and Anxol were detected and identified using various TLC Methods (1-2). Many solvent systems are also available in literature for comparative study of these drugs, but none of them were reproducible. Here, we have developed a new, specific, cost effective and reproducible solvent system for detection and identification of these drugs by HPTLC method. The solvent system we have developed is Benzene: Methanol: Acetone (8:1:1). The Psychotropic substances are detected and identified by spraying Dragendroff's reagent on HPTLC plate which shows orange coloured spots at different hRf values. The drugs can be detected and identified by their different hRf values.

Key Words : LIGNOCAINE, PROMETHAZINE HYDROCHLORIDE, DIAZEPAM & HPTLC

Introduction :

Cast History :

A girl aged seventeen years visited to private hospital for ear treatment. The doctor injected anesthesia containing psychotropic drugs to the victim. The victim became unconscious and taking advantage of her unconsciousness doctor raped the girl. The girl lodged the complaint in the police station. The investigating officer seized the exhibits such as injections, used ampules and syringe along with needle from scene of crime and sent to laboratory for analysis.

Several methods have been reported in the literature for the detection and identification of psychotropic substances Xylocaine, Phenargen and Anxol from TLC method to modern sophisticated instrumental methods (3-5). They all need sophisticated instrumentation and are cost effective. Here, we have used HPTLC method, which is simple, reliable and fast tool for detection and identification purpose of the drugs.

Experimental Details :

Chemicals & Reagents :

All chemicals such as Benzene, methanol, ammonia, bismuth subnitrate, potassium iodide and acetic acid were of analytical reagent grade. Control drug samples such as Xylocaine, Phenargen and Anxol of same pharmaceutical company were purchased from medical shops.

Sample Preparation :

Methanol extracts of Xylocaine drug, empty ampules, empty vial and used syringe with needle were taken in separate, clean and dried test tubes and named as Ex-1, Ex-2, Ex-3, and Ex-4.

The extracts were concentrated on water bath up to sufficient volume and preserved for spotting. Same way control samples of Xylocaine, Phenargen and Anxol were prepared and named as C-1, C-2, C-3.

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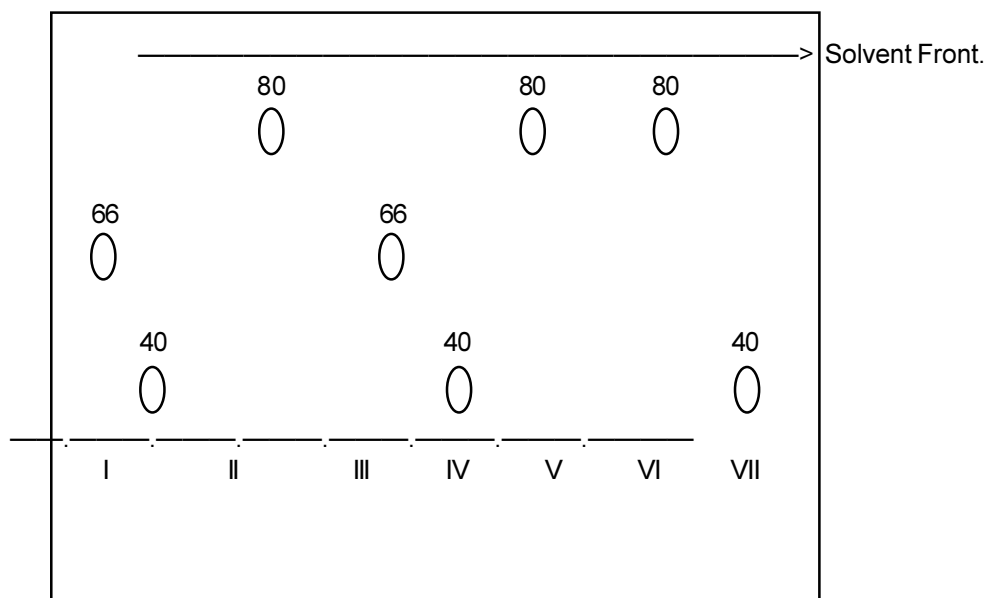
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Chromatography :

HPTLC plate (10 x 10 cm silica gel 60 F-254) is activated in oven for 10 mins. at 110° C. The control sample of drugs alongwith exhibits were spotted 5 µl each were spotted on HPTLC plate, just 1 cm from the edge of the plate with a distance of 1 cm between the spots.

The plate was developed in solvent system (Benzene: Methanol: Acetone: in proportion, 8:1:1, 10 ml v/v) in presaturated HPTLC chamber. Developed plate was air dried and then sprayed with Dragendroff's reagent.

Chromatogram :-



Where, I To III : Control samples C-1 to C-3

I : Control sample of Xylocaine

II : Control sample of Phenargen

III : Control sample of Anxol

IV To VII : Exhibits 1 to 4

Ex 1: Colourless liquid labeled Xylocaine drug .

Ex 2: Empty ampule labeled Phenargen.

Ex 3: Empty vial labeled Anxol.

Ex 4: Used syringe with needle.

RESULTS AND DISCUSSION :

Generally samples received in forensic laboratories are not in pure form and many times they are in trace quantities or insufficient amount. Therefore the analysis of these samples is difficult. It is difficult to carry different tests and instrumental analysis. Same problem we had faced in this case. While studying the methods of these drugs, we observed that many methods are available for these drugs at different conditions, but not a single method is available which is suitable for all these drugs.

HPTLC OBSERVATIONS :

From the chromatogram, it was clear that hRf. of Ex-1 matched with hRf of C-1, and it was the sample of Xylocaine drug (lignocaine). hRf of Ex-2 matched with C-2, it was the sample of phenargen (promethazine hydrochloride). hRf of Ex-3 matched with C-3 and it was the sample of anxol (Diazepam). Syringe extract Ex-4 matched with C-2 and C-3 means it contained traces of mixture of phenargen and anxol i.e., promethazine hydrochloride and Diazepam.

Results of the analysis, of exhibits no. 1 to 4 revealed that, exhibit no. 1 contains xylocaine, exhibit no. 2 i.e. empty ampule labelled as phenargen contains phenargen, exhibit no. 3 empty vial labelled Anxol contains Anxol whereas exhibit no. 4 i.e. used syringe with needle contains traces of anxol (Diazepam) and phenargen.

After this case, we again performed many experiments to check the sensitivity and reproducibility of this method, and conclude that same system can perform for other drugs and gives same results using conventional apparatus.

TABLE – I
Mean hRF Values of Compounds Chromatographed

Solvent System	Xylocaine	Phenargen	Anxol
Benzene : Acetone: Methanol: (8:1:1)	66	40	80
Methanol: Ammonia (19.5:0.5)	90	89	64
Choloform Acetone (9:1)	12	62	—
Benzene: Methanol: Ammonia (7.5:2.5:0.5)	88	87	81

Thus we tried different solvent systems on control samples, observed their hRf values for example Benzene: Acetone: Alcohol, Chloroform: Acetone, Benzene: Ammonia: Methanol; Methanol Ammonia etc. in different proportions (Table-1). Benzene: Acetone:Methanol (8:1:1) was found to be the best solvent system for detection and identification of these drugs.

ACKNOWLEDGMENT :

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DETECTION OF DEXTROPROPOXYPHENE AND ADDED ADULTERANTS IN SUSPECTED OPIUM SAMPLE: A CASE STUDY

S. O. Chetti, M.K.Malve, R. Krishnamurthy*

ABSTRACT

Misuse of narcotic drugs with adulteration of different additives to divert the investigation is common phenomenon. The solubility tests were carried out for checking the possibility of organic and inorganic compounds. The spot tests were carried out which show the possibility to presence of opium compound. Methanol extract of sample was taken for TLC, GLC and GC-MS analysis, UV spectra was taken in aqueous acid medium. The GC-MS spectrum showed presence of paracetamol and anthraquinone. The TLC plate was developed in the solvent system benzene: acetonitrile: methanol (8:1:1) with locating spray: 1) alcoholic iodine followed by alcoholic HCl and 2) Dragondorff's reagent, that shows presence of unknown spot at Rf 0.48-0.50 and did not show presence of opium alkaloids like morphine, thibene, narcotine and papaverine...etc. Using preparative TLC the unknown component was eluted. The GC-MS of eluted sample showed presence of dextropropoxyphene, which was further confirmed by using different techniques like TLC, GLC and other spot tests. The aqueous extract of sample showed presence of sugar.

Key words: Narcotic drugs, adulteration, GC/MS, TLC, GLC.

1. Introduction:

The narcotic drug samples are received by Forensic science laboratories (FSL) for analysis from different agencies. No of times the samples are misleading and contain different drugs than that indicated by the investigating officers. The analytical procedure followed for the particular indicated drug results in negative tests but reveal the presence of other drugs. Many times colour tests, UV and GLC do not differentiate the drug from the bulk. The investigating officers initially check the suspected drug by using the detection kit for narcotics drugs, which generally contain the different reagents like marquis, frodhe's, conc. HNO₃, Dragondorff's ...etc. On that basis they forward the sample to Forensic science laboratories for confirmation and quantification of abused suspected drug. In this case a sample received from the investigation agency was suspected to contain opium. The sample was blackish sticky mass like opium. The spot tests like marquis test, dragondorff's test, and frodhe's test showed possibility of opium in the sample.

The smell of the sample was totally different and the first task of the forensic scientist was to rule out the possibility of opium and to detect the presence of any other narcotic drug present in the sample. Adulterants were also used to mask the narcotics drug and divert the investigation.

2 Material and methods:

2.1 Chemicals and reagents:

Methanol, acetonitrile, benzene (A.R. grade) were used procured from Aldrich.

0.1 N hydrochloric acid, dragondorff's reagent, mandelins reagent, liebermann's reagent, marquis reagent, frodhe's reagent, alcoholic Iodine, alcoholic HCl Felhing reagent A and Felhing B reagent were prepared freshly.

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Crude heroin, opium, dextropropoxyphene, morphine, caffeine and methaqualone available in the laboratory were used as control.]

1.5 mg/ml of control dextropropoxyphene was prepared for quantification.

2.2 Extraction of drug from the samples:

1.0 gram of sample was taken in ~10 ml of methanol warmed on water bath, methanol extract was filtered through filter paper and concentrated to 1ml. The residue was dried and dissolved in water.

The water extract was tested for inorganic analysis. Methanol extract was taken for TLC, GLC and GC/MS study.

2.3 Apparatus:

1) TLC Conditions:

Sample solution was spotted on TLC plate along with control drugs under following conditions:

Precoated activated silica gel ^{60F} 254 (10X20) cms

Solvent system: benzene: acetonitrile: methanol (8:1:1),

Locating reagent: A) Alcoholic iodine followed by alcoholic HCl, B) Dragondorff.

Developing Chamber of CAMAG having size 10X20cms was used.

Spray: Simple spraying unit.

Standards: Crude heroin, morphine, caffeine, methaqualone, dextropropoxyphene.

2) Gas Liquid Chromatography (GLC- NUCON Model-5765):

Methanol extract of the sample was subjected to GLC analysis under following conditions 2µl of injections were done. Column-HP-17, Oven temperature-220°C Injector temperature: 280°C, Detector (FID) Temperature-280°C, Carrier gas – Nitrogen, fuel: Hydrogen & air mixture.

For Quantification: 10 mg/ml of sample in methanol, 1.5mg/ml of control dextropropoxyphene and 0.6mg/ml of phenyl butanone was added as internal standard.

Injection: 2µl of solution (internal standard and sample mixed 1:1 proportion)

3) UV spectrophotometer (Specord S 100) Conditions:

UV range –220-350nm, Medium: 0.1 NHCl, Threshold- 10. sample was analysed and I max was noted.

3) GC/MS:(ThermoFinnigan UK, model- traceGc/traceMS):

Methanol extract of the sample was subjected to GC/MS analysis under following conditions:

HP- 5 capillary column, 15mX0.32m film thickness,

Injector temperature: 220°C, oven temperature: 180°C-250°C, ramp rate: 10°C per min, final temperature: 250°C, source temperature; 200°C and interface: 180°C.

3. Results And Discussion:

Similarities in spot tests between opium and dextropropoxyphene^{1,2} is shown as below:

Test	Observations	
	Opium	Dextropropoxyphene
Marquis test	Violet	Black-Violet to green
Dragondorff's test	Orange spot	Orange spot
Frodhe's test	Violet to olive green	Violet

The above-mentioned tests do not differentiate between opium and dextropropoxyphene, from spot tests and appearance of the sample, it was suspected to contain opium.

The primary analytical tests were carried for the sample. The solubility and colour tests did not conclude any thing for the sample. The typical analytical findings for samples are:

No	Test	Observations
1	Appearance	Blackish sticky mass (Opium like)
2	Smell	No typical smell
3	Solubility in water	Partly soluble
4	Solubility in dil HCl	Partly soluble
5	Solubility in Methanol	Partly soluble
6	Marquis reagent	Violet colour – Slight greenish
7	Frodhes reagent	Voilet colour
8	Thin layer Chromatography	Do not show presence of opium alkaloids like morphine figure No. 1
9	UV spectra in 0.1N HCl	λ max=245nm see figure No.6

For test nos 1 to 8, the sample was directly used as such. Concentrated methanol extract was taken for TLC and GC/MS. From the above observations paracetamol and anthroquinone were detected. The typical spot was observed at Rf value 0.2 is indicative of presence of paracetamol, the spots in figure no 1 do not indicate presence of opium constituents i.e. thebaine, morphine... etc. The chromatogram indicated one distinct spot at Rf – 0.5 not talling with any drug. The preparative TLC (Silica gel-20-25 μ m) was done and the methanol extract of eluted spot was injected to GC/MS for identification. It showed presence of dextropropoxyphene. The typical GC/MS TIC and mass spectra are shown in figure 2 and 3 respectively.

The methanol extract of sample was spotted on TLC plate along with dextropropoxyphene as control, shown in figure No. 4, which shows presence of dextropropoxyphene. GLC of methanol extract was also performed, the RT of control sample of dextropropoxyphene tallies with that of sample as indicated in figure No 5. The UV analysis of the sample could not yield any valuable information but proved presence of paracetamol an adulterant as shown in figure no 6. The presence was further confirmed by colour tests for dextropropoxyphene.

- 1) Mandelins test: gray to brown colour
- 2) Liebermann's test: brown

The typical values obtained for the drugs are

- 1) Thin layer chromatography: Exhibit shows orange spot at Rf 0.48- 0.5 that matches with standard dextropropoxyphene.
- 2) Gas liquid chromatography: Exhibit shows a peak at RT –2.21 matches with standard dextropropoxyphene.
- 3) Quantification of dextropropoxyphene by GLC showed that sample contains 3.2% dextropropoxyphene and about 25% paracetamol .
- 4) The water extract of sample showed presence of about 50 % direct sugar, other ingredients like anthroquinone was also present in the sample as tested by other organic tests.

4. Conclusion:

From the study it is conclude that higher % of paracetamol, sugar and other adulterants like anthroquinone mask the low level of narcotics drug. The primary techniques like TLC and UV were fail to identify the drug in lower percentage. From the observations it is studied that addition of adulterants like sugar helps to make the product sticky and addition to anthroquinone dye that make it blackish, paracetamol was used as filler to hide the narcotic drug. The spot tests like marquis test, dragondorff test are very sensitive and hence investigation was supposed as it contains opium.

The different analytical techniques and the different tests help forensic scientists in detection of actual drug.

5. References:

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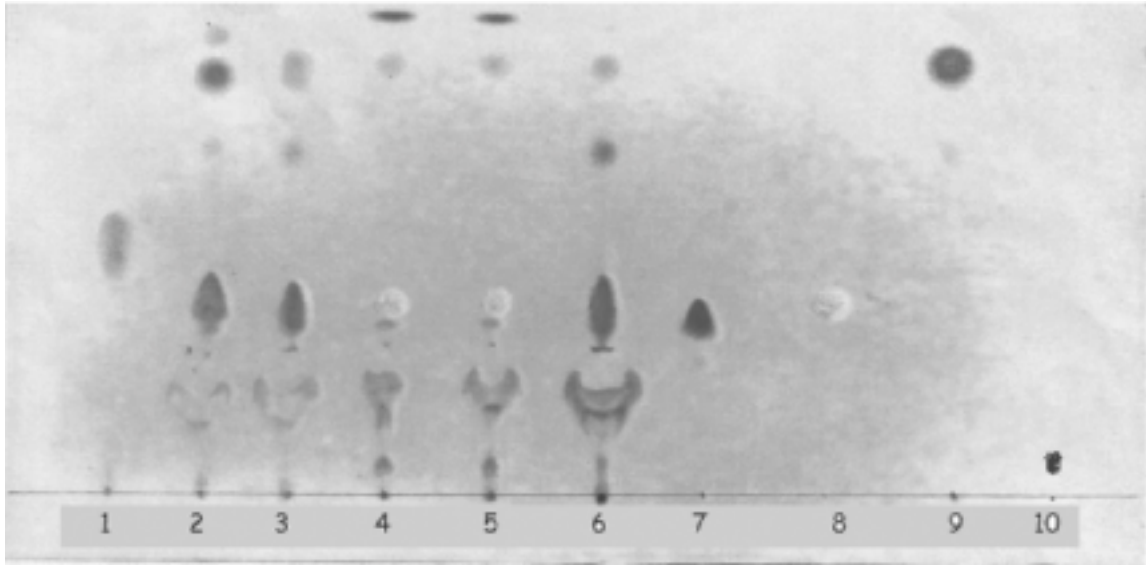


Figure No1 TLC of methanol extract of sample

- 1- Sample (Sample), 2, 3, 4 and 5 – Other samples, 6- Crude heroin, 7-Thebaine, 8-Caffiene, 9-Methaqualone, 10- Morphine.

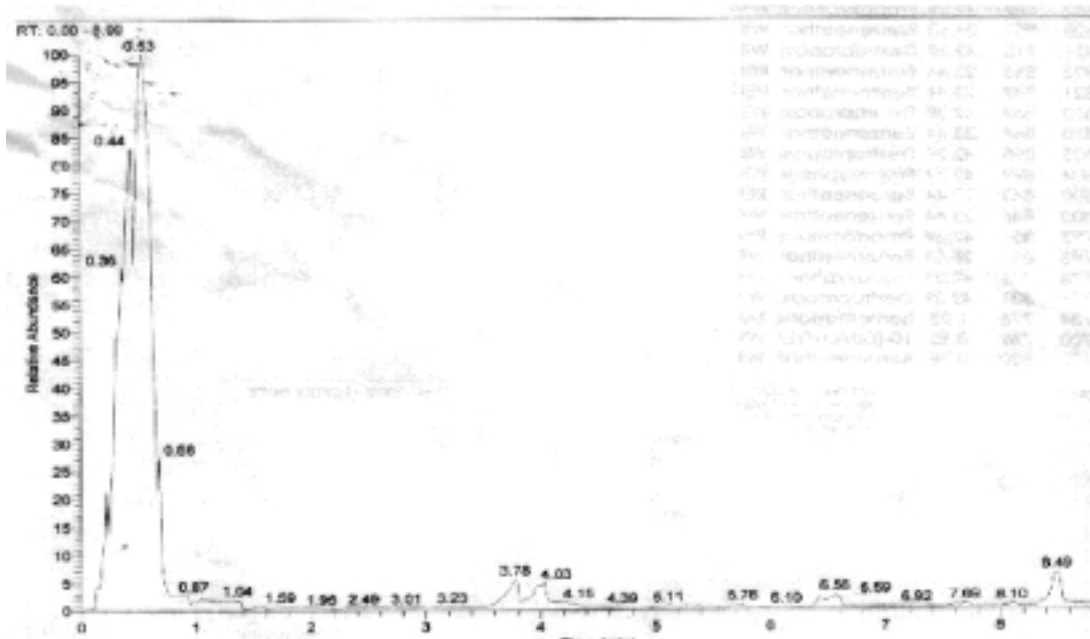


Figure No2. GC-MS graphs of eluted sample.

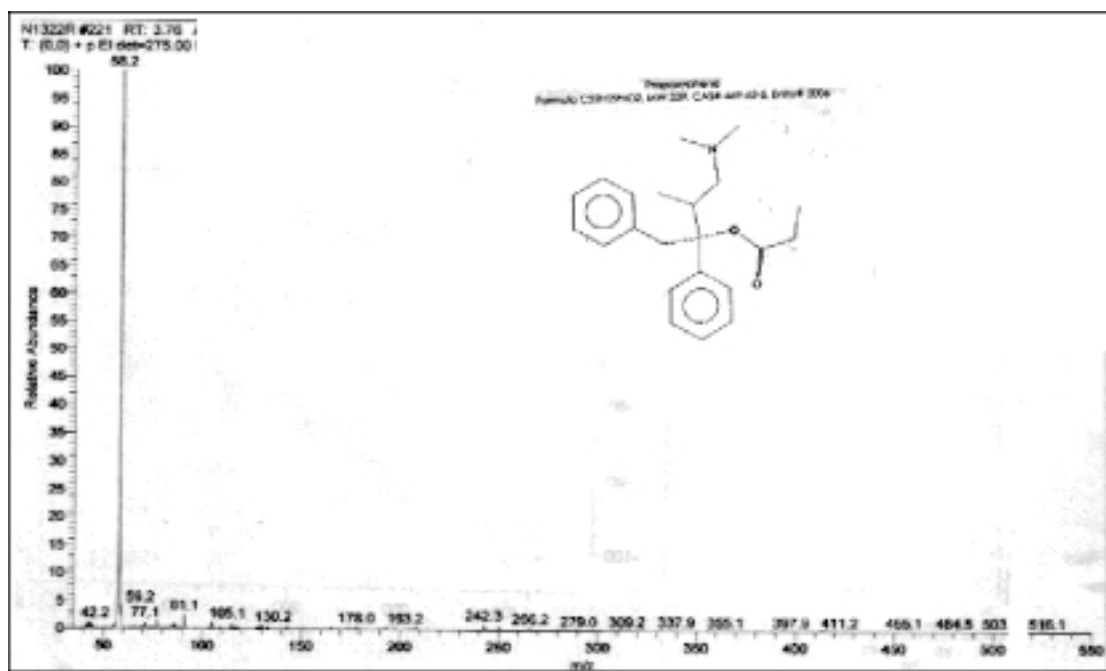


Figure No. 3 GC/MS graph of eluted sample

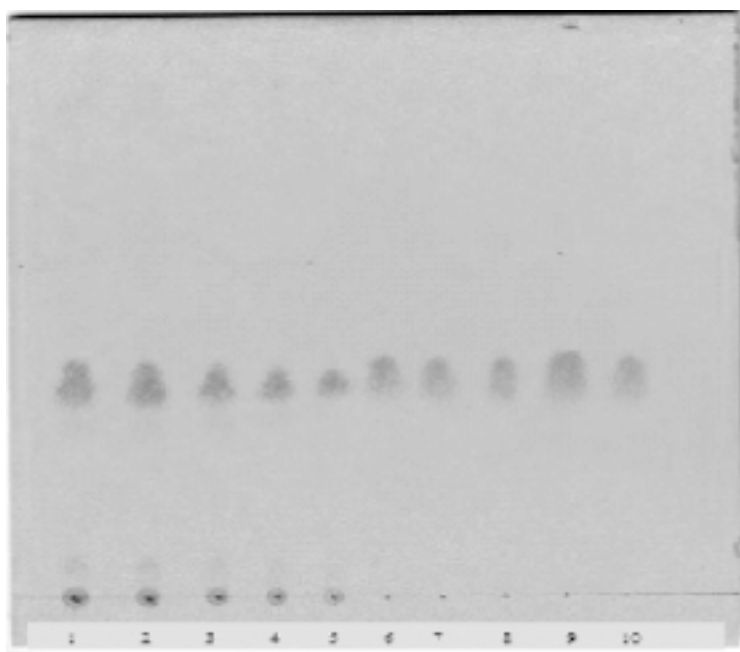


Figure No4 TLC

Spots 1 to 5- Sample

Spots 6 to 10-Standard Dextropropoxyphene

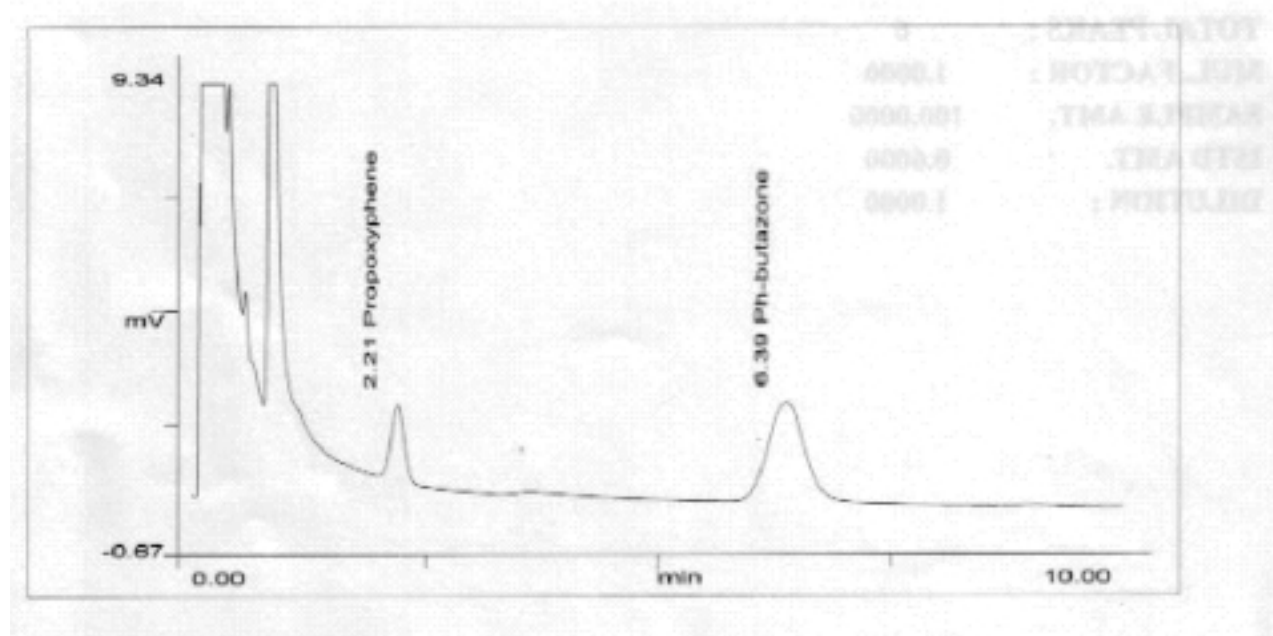


Figure No.5 Gas Liquid Chromatography graph

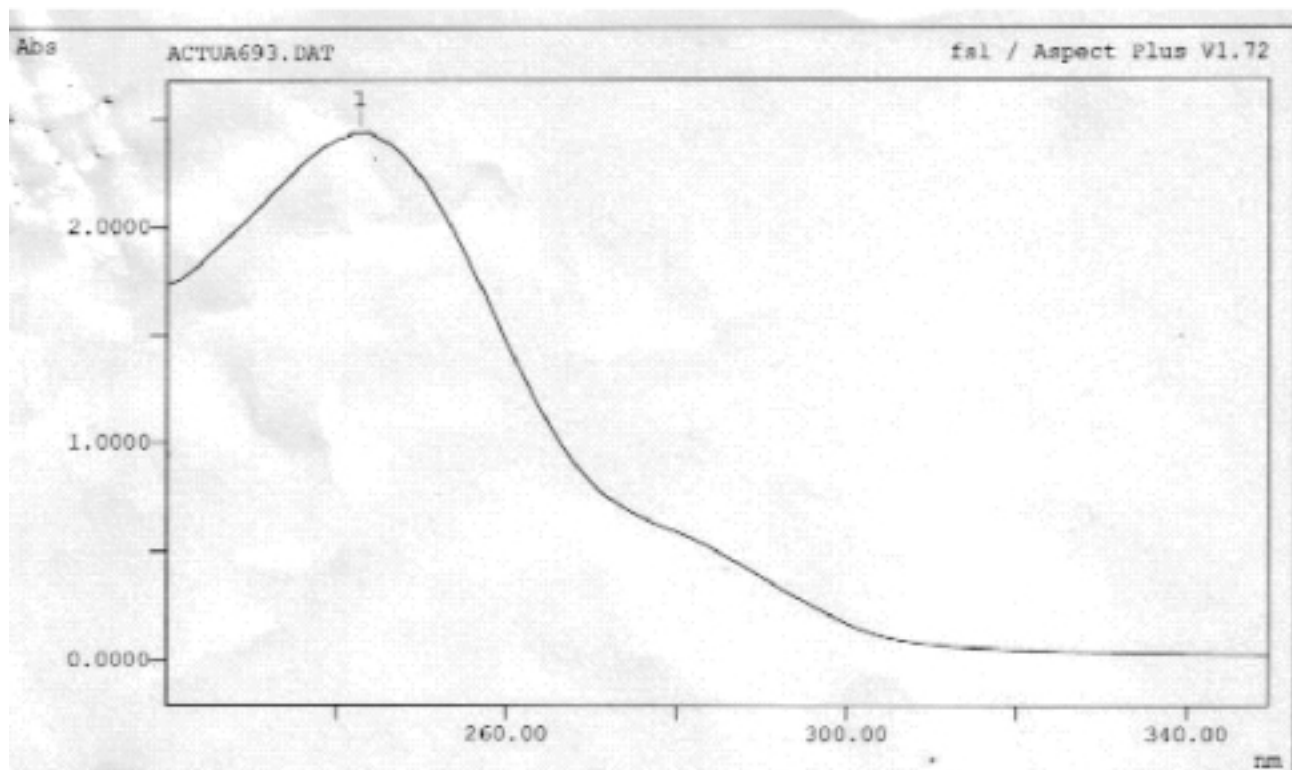


Figure No6. UV spectrum of sample in aqueous acid (0.1N HCl)

IMPACT OF CONTAMINATIONS IN TRACE ANALYSIS DURING FORENSIC INVESTIGATIONS OF FIREARM DISCHARGE RESIDUES : A STUDY BY NEUTRON ACTIVATION ANALYSIS

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ABSTRACT

Careful analysis and proper interpretation of the firearm discharge residues (FDR) along with other components of ammunition provides useful information in the forensic investigation. If such exhibits are contaminated, may be due to several reasons, at the scene of crime / handling / laboratory; even the most precise and careful analytical outcome of such exhibits may mislead the investigations. During the present work an attempt has been made on typical simulated samples and a study has been carried out using neutron activation analysis (NAA) to indicate how much could be the effect of contamination in various circumstances while interpreting the FDR analysis results. The interferences and possible enhancement in the analyte/s concentrations in fro FDR m various common contaminants like, soil, rust, grease, blood etc. has been studied and the observations are presented in this manuscript.

Introduction:

Determination and interpretation of actual concentration of particular trace elements / in exhibits / sample is a crucial part in forensic investigations. Crimes and homicides committed in day-to-day life are of different nature. Approaches in crime detections are improving and is required to improve & update rapidly against equally fast moving / thinking culprit's mind. Many times physical evidences are not adequate to establish the crime / criminal or to arrive at meaningful conclusion, thereby need of forensic investigations become essential. Forensic investigations involve appropriate use of analytical approaches in which chemical analysis is one of the important parameters. Amongst these, many a times trace elemental identification and accurate quantification of the analytes / in forensic exhibits / samples could provide important information to solve the crimes.

Majority of crimes and homicides in day-to-day life are committed by gunshots. Lead is a major constituent of bullets, particularly revolver bullets. Lead is a ductile metal and is mixed with up to 2-5 % antimony to harden the bullets¹. High purity metals are not generally used in the preparation of bullets. Apart from the addition of antimony there are possibilities of presence of some trace constituents associated with these metals when they are separated from the ores. Antimony is also present in the primer in the form of sulfide along with barium, which is present as nitrate. Copper is present in the bullet jackets, cartridge case and percussion caps. During the firing of a gun, hot gases are produced due to ignition and burning of propellants loaded in the cartridge. These gases diffuse, get cooled and deposited as particulate / residues containing traces of Pb, Sb, Ba, Cu along with other trace constituents, on the holder of the gun and also in the vicinity of the firing point. Depending upon the circumstances, the firearm discharge residues (FDR) samples / exhibits are collected. If a person is apprehended at the scene of crime, swabs of his / her hand/s and fingers are taken to collect the FDR as evidence. In other cases, the FDR on the targets are collected immediately or after a time gap and in such cases the environment around the target has a great impact on FDR samples / exhibits thereby on its analysis. Careful analysis and proper interpretation of FDR along with other components of ammunition and possible contaminations from the environment, from which the exhibits was / were collected, can provide useful information in the investigation of crimes. Ideally the deposits on FDR contain the products of decomposition of the propellant, primer, and also a

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contribution from the bullet and the cartridge case. The composition of firearm discharge / gun shot residues is generally made up of three major elements² mainly lead, barium and antimony, along with trace amounts of tin, copper, mercury, zinc, silver, arsenic, etc. which are the possible impurity elements from lead and antimony. Presence of these elements and their concentration levels in exhibits provide important information in source identification.

Neutron activation analysis (NAA) is one of the most sensitive multi-element, non-destructive techniques used for the determination of elements in gun shot residues³⁻⁴. Generally, the place and environment where the target is found along with the proper collection / handling of the exhibits contributes significantly in the analytical results. If the exhibits get contaminated, analysis of indicative elements barium, antimony and copper becomes difficult mainly due to the presence of interfering elements during NAA. Also there can be a possibility of the presence of the FDR indicative elements in surroundings, which might enhance the concentrations of FDR analytes. Transfer from human fingers⁵, hands, guns, as well as occupational exposure and other contaminants from the scene of crime; have been cited as possible sources of artifacts⁶ – therefore there is a need to reduce or minimize such ambiguities. In such cases, only careful / precise analysis does not provide meaningful results but proper interpretation of the results, contributions from control samples and contaminations from the environment plays an important role. Possibilities of barium contamination during the collection of swabbing⁷ and presence of antimony in synthetic cloth⁸ for FDR analysis have been reported. Therefore it is extremely essential to pay more attention towards proper collection of the exhibits along with representative control samples followed by precise / accurate analysis and proper interpretation of results in such investigations. Contaminations of exhibits are common observation during forensic investigations leading to inconclusive outcome. During the present work, an attempt has been made to study the effect of various contaminants like soil, rust, grease, blood, etc., on simulated gun shot residue samples during NAA.

Experimental:

All the operations during the work were carried out in a clean laboratory to avoid possibilities of contaminations. The reagents used during the work were of supra pure / analytical reagent grade. Glasswares were cleaned in hot acid baths followed by distilled water.

Neutron irradiations were carried out in the Apsara reactor (a swimming pool type reactor at BARC, Trombay, Mumbai, India) with a thermal neutron flux of 10^{12} n. cm⁻² sec⁻¹ for suitable lengths of time. A high purity germanium (HPGe) detector coupled to a multi channel analyzer (MCA) was used for the measurements of the gamma activities.

Experiments were carried out first to assess the major and minor elemental concentrations in few materials like soil, cotton / synthetic cloths, cotton wool, soiled cloth, cloth contaminated with rust / grease / blood stain etc. These matrices / samples (50 – 200 mg) were properly sealed in polyethylene bags and irradiated in Apsara reactor for various lengths of time (30 min – 20 hours). The measurements of gamma activity were carried out after sufficient / required cooling (3 hours – 3 days) to assess the concentrations of different elements present in such matrices / contaminants. The concentrations of the elements present in different matrices are shown in Table-1 and typical gamma ray spectra of different cloth samples as such and those contaminated with soil, grease, blood, rust, etc., are shown in Figs. 1 – 9.

In the absence of actual gun shot residue samples, simulated samples were prepared by spiking known amounts of standard solutions of FDR elements (barium, copper and antimony) on cloth pieces and dried under an IR lamp. The simulated samples as such and in presence of different contaminants (soil, rust, grease and blood) were sent for irradiation along with suitable standards. Instrumental and radiochemical approaches were adopted for quantification of barium, antimony and copper and the results are shown in Table 2.

Results and Discussion:

Observations in Table-1 are diagnostic information of the possible macro-micro constituents present in various contaminants and are likely to be associated with FDR when it is collected. Information of such contaminants

could possibly help the investigating person to arrive at meaningful analytical interpretation on FDR. During the work it was observed that, cotton cloths / cotton wools do not contribute towards any FDR elemental concentrations, whereas synthetic clothes contain appreciable amounts of antimony, which could be of importance in the interpretations of the FDRs results. During the current work only cotton cloths were used to prepare simulated samples because they were found to be free from FDR analytes. When cloth samples with different contaminants were analyzed, the concentration of the elements varied depending on the extent of contamination and the nature of the contaminants. The presence of antimony in soil / rust / grease led to the enhancement of antimony content when the exhibit / samples were contaminated in simulated samples. The concentrations of barium and copper were found to be below detection limit in cloth as well as in presence of blood. Presence of alkali and transition elements in contaminants like grease; alkali, rare earths and transition elements in soil / rust made the direct measurements and quantification difficult for copper and barium mainly because of high background and spectral interference. Sufficient cooling time also could not make the direct determination handy for FDR analytes. Therefore, instrumental neutron activation analysis (INAA) alone could not prove adequate in providing meaningful results. Hence radiochemical neutron activation analysis (RNAA), an alternative approach was adopted to quantify the FDR analytes. Barium and copper, which were difficult to detect by INAA could now easily quantified by RNAA. Enhancement in the concentrations of the analytes from the contaminants like soil, rust, and grease could not be avoided, which can be seen from Table 2. Therefore, there is a need of proper interpretations of such results to establish the actual concentrations due to FDR analytes.

No FDR elements were detected in exhibit samples contaminated with blood alone; the presence of sodium, potassium, chlorine and manganese did not interfere with the determination of FDR analytes. Therefore, when the exhibit is contaminated with only blood, normal INAA / RNAA can be applied, however, when contaminated with any other contaminants, analysis of the representative control becomes extremely important which will provide actual information about concentrations of analytes from other contaminants / matrix. While implementing INAA for analysis it is necessary to establish the counting and cooling time of the samples to measure the interference-free activity of the analyte/s. Figs. 1 - 8 represent the gamma spectra of cotton / synthetic cloth and cotton cloth contaminated with different contaminants, immediately and after required cooling periods to indicate how the spectrum appears against the gamma spectrum of pure FDR analytes in Fig-9.

Lead is an important constituent of FDR. But its determination using normal NAA is difficult. Effects of similar contaminations on lead determination are being studied using complimentary analytical approaches.

During this work authors have attempted to indicate the effects of contamination on FDR analysis, however, contamination in general in any forensic investigations could pose serious problems in arriving at a meaningful outcome. Proper collection, analysis of representative control and correct interpretations of the analytical data can only provide important information, which will lead the investigation in the right direction.

Acknowledgement:

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Table 1
(Concentrations of elements ($\mu\text{g/g}$) in possible contaminants and cloth by INAA)

Sample	Cotton Cloth (C)	Cotton Wool (W)	Synthetic Cloth (S)	Soil-1 (Trombay, Mumbai)	Soil-2 (Navi Mumbai)	C + Soil-1	C + Grease	C + Rust	C + Blood
Weight (g)	0.155	0.106	0.113	0.084	0.089	0.141	0.161	0.145	0.139
Na	0.01	0.01	0.01	0.32	0.84	0.08	0.01	0.04	0.02
K*	ND	ND	ND	0.39	0.56	0.10	ND	0.02	0.01
Br	ND	ND	4.32	2.11	1.42	0.58	0.15	0.30	ND
Mn*	0.01	0.01	0.01	0.14	0.13	0.08	0.001	0.46	0.01
Cr	ND	ND	ND	10.91	8.73	2.27	0.31	6.52	ND
Fe*	ND	ND	ND	9.11	12.50	2.29	0.10	0.23	ND
Co	ND	ND	ND	87.31	89.18	21.96	2.37	4.56	ND
Sc	ND	ND	ND	63.87	43.58	16.06	3.81	0.98	ND
La	ND	ND	ND	18.39	20.07	3.62	ND	0.97	ND
Sm	ND	ND	ND	5.83	2.78	1.37	ND	0.31	ND
Eu	ND	ND	ND	0.98	1.24	0.18	ND	ND	ND
Sb	ND	ND	19.48	12.38	9.12	2.94	2.45	6.82	ND
Ba	ND	ND	#	#	#	#	#	#	ND
Cu	ND	ND	#	#	#	#	#	#	ND

could not determined due to spectral interference and high background.

* Indicates values in %, ND – not detected

Table 2
(Effects of contaminants on FDR analytes in simulated samples)

Samples	Weights (mg)	Sb Recovered (μg)		Ba Recovered (μg)		Cu recovered (μg)	
		INAA	RNAA	INAA	RNAA	INAA	RNAA
*Cotton Cloth	128.5	4.92 \pm 0.51	5.05 \pm 0.33	5.04 \pm 0.48	4.95 \pm 0.31	ND	5.11 \pm 0.32
*Cloth + Soil-1(s)	113.2 + 46.7	5.54 \pm 0.41	5.62 \pm 0.34	ND	8.68 \pm 0.58	ND	6.11 \pm 0.41
*Cloth + Grease(g)	118.9 + 32.1	5.33 \pm 0.49	5.38 \pm 0.38	ND	5.41 \pm 0.35	ND	4.93 \pm 0.29
*Cloth + Rust (r)	124.3 + 26.8	6.12 \pm 0.48	6.14 \pm 0.39	ND	6.09 \pm 0.31	ND	6.25 \pm 0.34
*Cloth + Blood (b)	119.1 + 24.2	4.89 \pm 0.46	4.95 \pm 0.41	4.92 \pm 0.38	5.05 \pm 0.39	ND	4.97 \pm 0.28
Cloth + (b,s,r,g)	118 + 71.4	2.28 \pm 0.26	2.34 \pm 0.22	ND	5.05 \pm 0.34	ND	2.11 \pm 0.19

* samples spiked with 5 μg each of Ba, Sb and Cu standards.

ND – Not determined due to interference from other analytes or high Compton background.

Figure 1
(Gamma spectrum of cotton cloth)

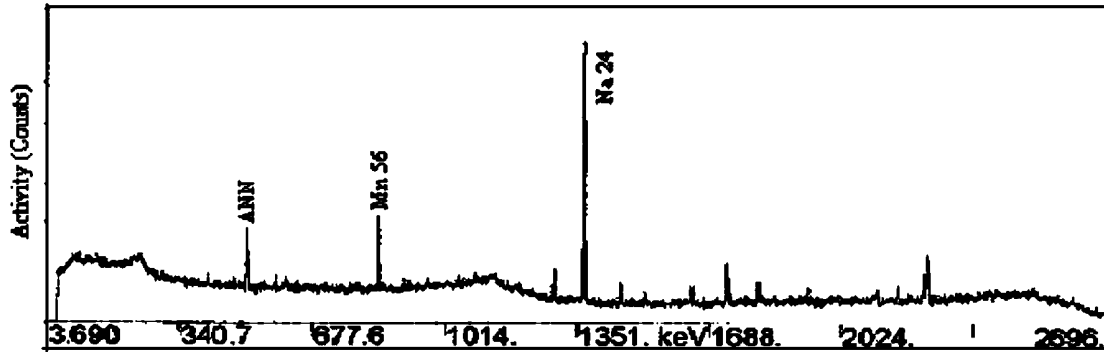


Figure 2
(Gamma spectrum of synthetic cloth)

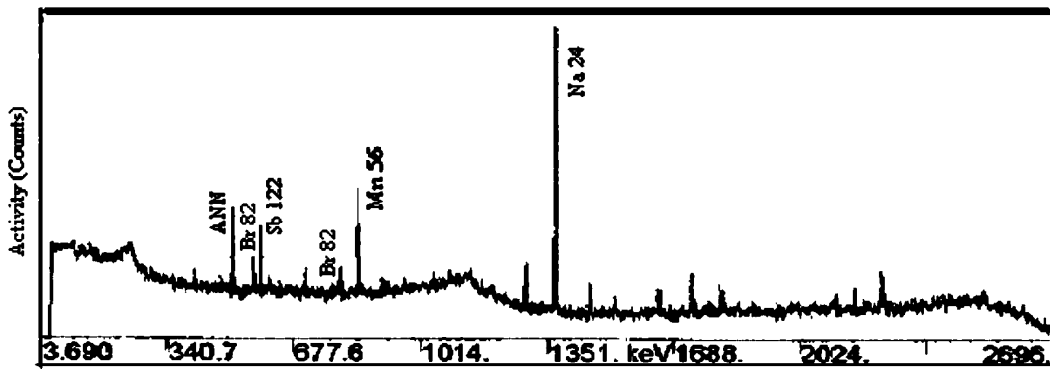


Figure 3
(Gamma spectrum of cotton cloth contaminated with blood, 3 hours after irradiation)

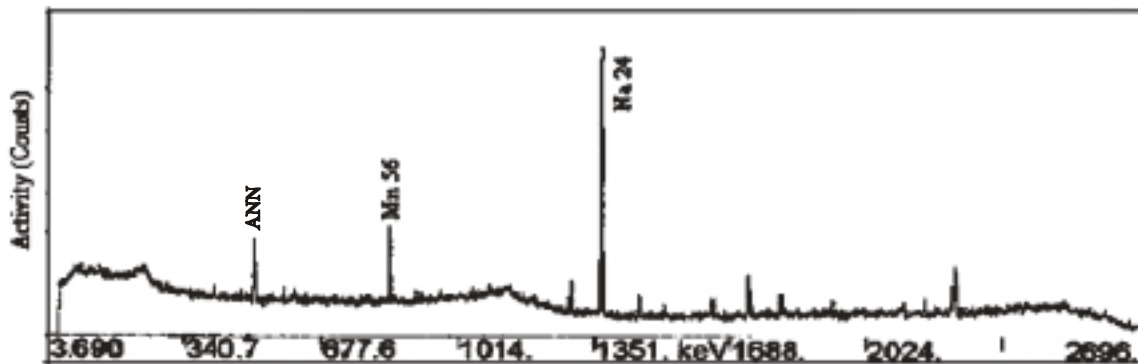


Figure 4
(Gamma spectrum of cotton cloth contaminated with grease, 3 days after irradiation)

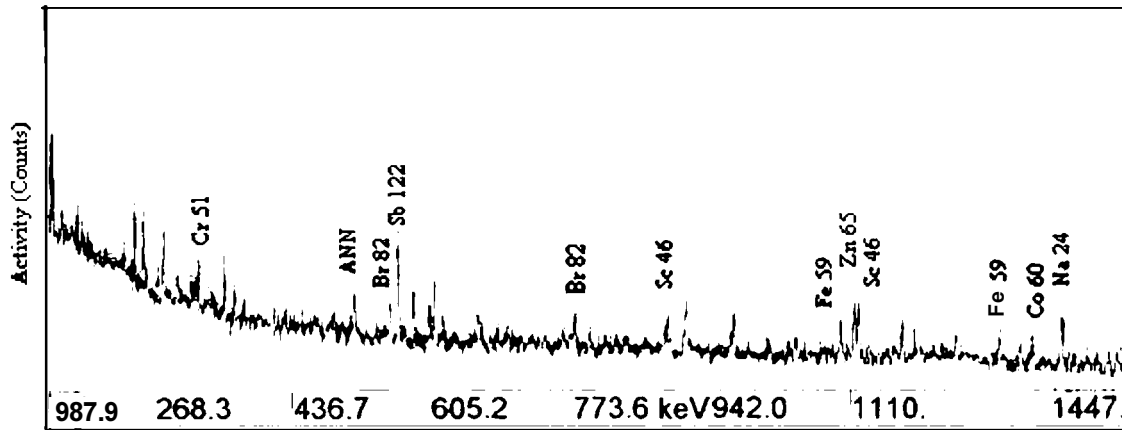


Figure 5
(Gamma spectrum of cotton cloth contaminated with soil, 3 hours after irradiation)

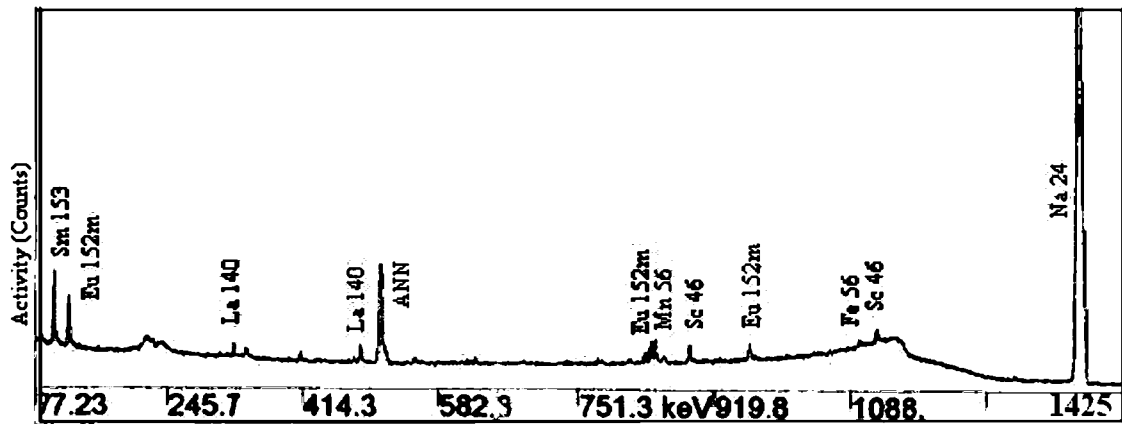


Figure 6
(Gamma spectrum of cotton cloth contaminated with soil, 3 days after irradiation)

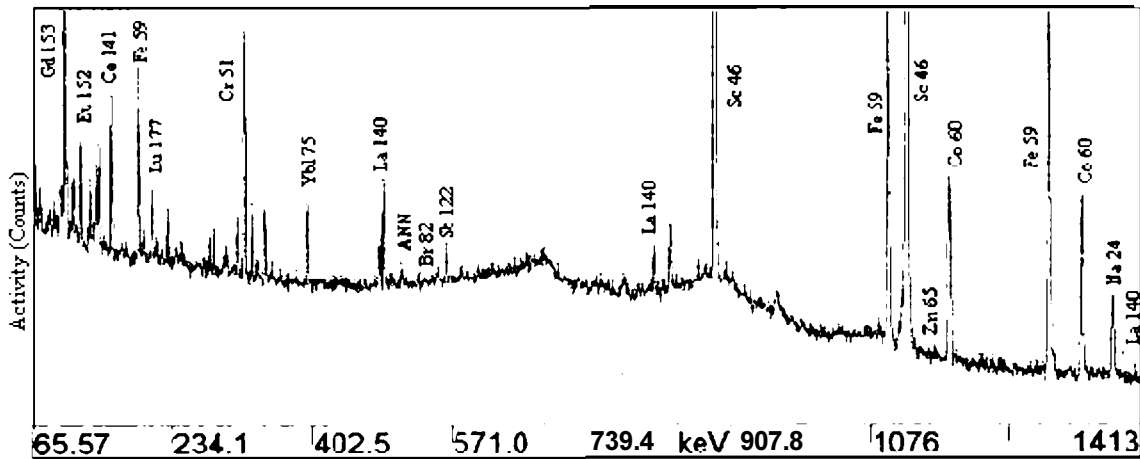


Figure 7
(Gamma spectrum of cotton cloth contaminated with rust, 3 days after irradiation)

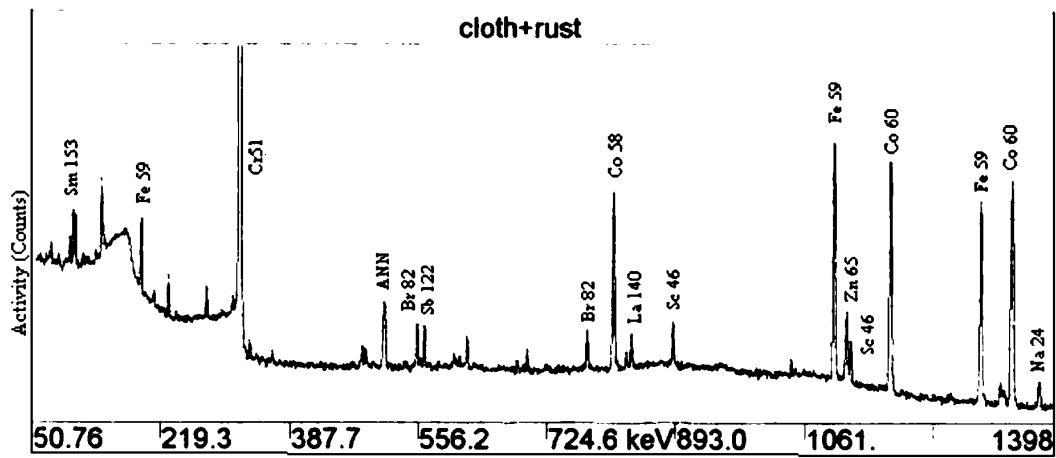


Figure 8
(Gamma spectrum of cotton cloth contaminated with rust, 3 hours after irradiation)

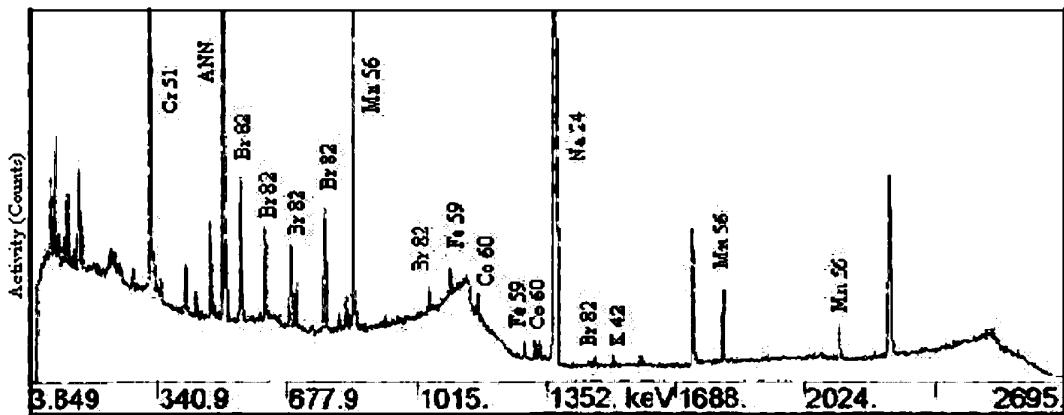
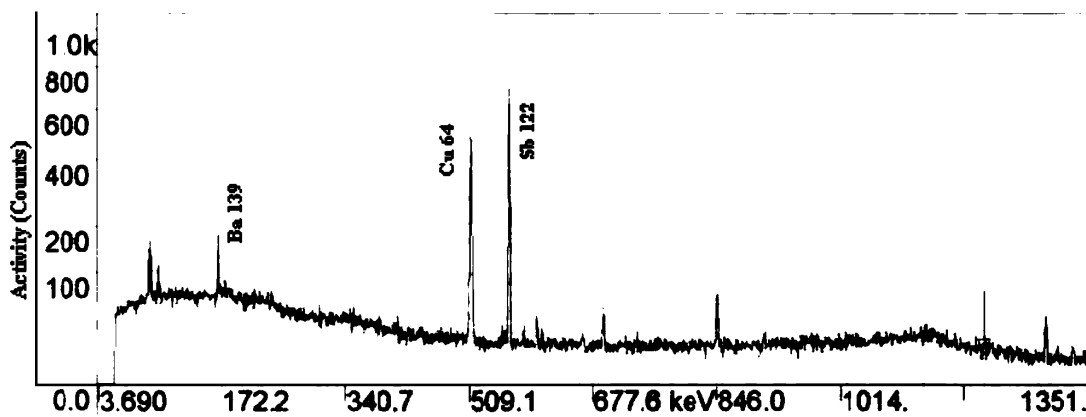


Figure 9
(Gamma spectrum of FDR elements, Ba, Cu and Sb)



DETECTION OF TRIDEMORPH BY THIN LAYER CHROMATOGRAPHY

K.V.KULKARNI, B.D.MALI, M.T.SEVELKAR and M. V. GARAD.*

ABSTRACT

A thin-layer chromatographic method for the detection of tridemorph (calixin) a systemic fungicide in biological material is described. The fungicide reacts with iodine in chloroform solution giving yellowish addition compound which with starch solution gives an intense blue coloured spot with detection limit of 5 µg.

Tridemorph was also detected with methyl orange as yellow spot and with bromophenol blue as intense blue spot at detection limit of 10 µg and 1 µg respectively. The biological impurities (such as amino acids, peptides, proteins, etc.) present in visceral material do not interfere with the test.

Key words

Tridemorph
Thin-layer Chromatography
Iodine Solution
Methyl Orange
Bromophenol blue
Biological Material

Introduction :

In India the control of plant diseases has been practiced from ancient times. Now a days a number of fungicides are widely used in agriculture for control of plant diseases⁽¹⁾. Earlier the fungicide treatment was based on external application to plants. They were stable within the host plant for considerable period of time to protect these during its growth period and having low mammalian toxicity. Among these tridemorph (2,6-dimethyl-4-tridecylmorpholine) is widely used as a systemic agricultural fungicide with eradicant action.⁽²⁾ Due to its easy availability it is frequently misused for homicidal or suicidal purposes.

Few analytical methods such as titrimetry, colorimetry and gas liquid chromatography⁽³⁾ are reported in the literature for its detection. However thin layer Chromatography (TLC) is a method of choice for its detection in forensic laboratories due to its easy availability and rapidity. Chromogenic reagents such as Dragandroff's, bromophenol blue are reported in the literature for detection of nitrogen containing compounds⁽⁴⁾ and fungicides^(5,6). In search of an alternative and equally sensitive reagent, iodine in chloroform followed by starch, methyl orange and bromophenol blue were found to be suitable for detection of tridemorph in routine toxicological analysis.

Experimental

Chemicals and Reagent

All chemicals used were of analytical reagent grade. Distilled water was used throughout. A solution of technical grade tridemorph (BASF, Germany) (1 mg/ml) was prepared in ethanol. Solutions of 0.5%(w/v) iodine

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in chloroform and 1%(w/v) starch in distilled water were prepared. Aqueous solution of bromophenol blue 0.1%(w/v) and Methyl orange 0.1%(w/v) were prepared. A solution of 0.5% v/v dilute hydrochloric acid was prepared.

Thin-Layer Chromatography

A standard glass TLC plate was coated with slurry of silica Gel G in water to a uniform thickness of 0.25 mm. The plate was activated by heating at 110° C for one hour. A standard solution of tridemorph (10 µl) was spotted on the plate, which was then developed in a presaturated TLC chamber using n-hexane -acetone (4:1) as solvent system. When the solvent had migrated to ca 10 cm, the plate was removed and allowed to dry at room temperature. It was sprayed uniformly with iodine solution. Immediately a yellow coloured spot for tridemorph was observed. After 5 min it was sprayed with starch solution. An intense blue spot (R_f 0.70) was observed.

The bromophenol blue reagent followed by dilute hydrochloric acid gives blue spot for tridemorph with yellow background; while methyl orange reagent followed by dilute hydrochloric acid gives yellow spot for tridemorph with pink background.

Result and Discussion

Tridemorph (2,6- dimethyl-4-tridecylmorpholine) (fig 1,I) has a morpholine ring in its structure.⁽⁷⁾ The iodine is attached to nitrogen of morpholine ring giving (2,6 dimethyl-4-iodotridecylmorpholine) (II) a yellow colored compound. This compound is readily oxidised and the free iodine is identified by production of deep blue adsorption compound with starch solution.⁽⁸⁾ The spot is stable for one hour after spraying. The solvent system used gives compact spot and can detect 5 mg of tridemorph on TLC plate. (Table No.1).

Bromophenol blue spray reagent gives blue spot with yellow background and methyl orange spray reagent gives yellow spot with pink background for tridemorph on TLC plate. The detection limit of tridemorph with this reagent is 1 µg and 10 µg respectively. All the reagents were suitable for detection of tridemorph in biological materials.

Amongst three reagents tried, the blue spot with bromophenol blue reagent is stable for a couple of days. This reagent was found to be most sensitive amongst all the reagents. Though Dragendorff's is a sensitive reagent; it is nonspecific and gives colour reaction with many nitrogen containing compounds. Hence in routine forensic analysis bromophenol blue was found to be suitable for detection of tridemorph in biological materials.

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TABLE NO. 1
Comparative colour reaction of chromogenic reagents

Name of Reagent	Colour of Spot	Background Colour	Detection Limit
Dragendorff's	Orange	Faint yellow	1µg
Iodine -Starch	Blue	Colourless	5µg
Bromophenol blue	Blue	Yellow	1µg
Methyl orange	Yellow	Pink	10µg

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