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TOXICOLOGY STUDIES
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**TOXINOLOGY OF POISONS: AN AREA OF STRENGTH FOR
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ABSTRACT:

The origin of poison according to **susrutha** the **kitabha Raksha** Disturbed, lord Brahma creation and from Anger of Brahma created a substance known as visha, which later killed kitabha and converted into various types of poisons on the earth like, **sthavaravisha** (static poison – immobile) and **Jangamavisha** (Mobile Poison), **Dusheevisha** (Accumulated poison and **Garavisha** (mixed poison) etc according to **Methological** origin of visha from susrutha samhitha Regarding. Toxicology is Defined as the branch of science which Deals with the study of **poisons** in Reference to their source, Character, properties, mechanism of Action, signs and symptoms, lethal Dose, causes of Death , Treatment, Detection, estimation Identification and post mortem findings. Poison is Defined as a substance which when Ingested ,inhaled , applied or Administered is capable of acting **Deleteriously** or **Drastic effect** on the body to the furthest corner of the body, that is produces ill health or death or GRIEF a state of mind **vishada [morbid sadness]** etc is known as **poison**.⁽¹⁾ Different Between Poison And Drug is mainly the **poison and the drug** is a dose, since a substance given in lesser Dosage in a Drug and when given in Higher Dose acts as poison EX : TRANQUILISERS (Sedatives). Legal Difference is define legally the poison and Drug are different cited on the basis of the intention with which the substance is given with the intention of healing is consider as Drug, similarly when the substance is given, even if in very small Dose, but with the intention of causing Harm or death it is labeled as poison. All are explained in full length paper like corrosives, Irritants, Neurotics, cardiac poisons, Respiratory poisons and miscellaneous etc. Based on the medico legal purpose ,the 7 groups are Discussed and elaborated like suicidal, Homicidal, Accidental, stupefying, Abortifacients cattle poison , Arrow poison etc. By knowing all it is to create the Awareness in public ,Regarding poisons Identification Through The **GLOBAL universe** and to create the usage, Dosage, signs and symptoms, management, Treatment, Identification organs Damage in chronic poisoning [**Dushee visha effect**] Accumulated poison, post mortem findings, Detection symptoms all are explain Nicely with **anti dotes** help.

KEY WORDS: Antidotes. Medico-legal . Post Mortem. Poison. Toxicology

INTRODUCTION

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More than fifty percent of population in India is RURAL population. There are more scorpions in rural areas than in urban population. The incidence of Snake Bites and subsequent Deaths is very High in India. Due to poisonous Conditions It amounts to anything between 10,000 to 50,000 death per year. As compared to developed countries this is many times more. Rural population is largely in Agriculture field after the Green revolution this population in highly exposed to poisonous Agro chemicals and pesticides.

The Economics stress and failure of agriculture has resulted in a rising trend of suicides among the farmers though Hanging is most common mode of suicide, a large number of suicides result from consumption of pesticides. Urban population also high degree of stress, in urban life in the prime cause of suicides. Addiction to Psychotropic

and Narcotic drugs is more in urban areas than in rural areas.

Environmental pollution is cause of chronic Toxicity with lead, mercury and many other environmental toxins. Petroleum fumes are amongst the major culprits. Uncontrolled use of prescription medication and iatrogenic poisoning in another cause of Toxicity in urban population.⁽³⁾

AIMS AND OBJECTIVES

Toxicology or Identification and characterization of poisons in an area of study helpful in Harvesting and wealth of India. Treatment of poisoning of both varieties that is field treatment and hospital treatment is essential in both rural and urban settings are necessary.

Every day new drugs are introduced in the market. Toxicity testing of these drugs is a large area of activity. Environmental toxicity is also a major area for Toxicology. Scientific preparation and standardization of Agada drugs is an area of research. Conceptual research can be enhanced by study of Agadatantra.

Therefore learning about treatment of poisoning is a good way towards service to the Nation. As most of the health care professionals are going to encounter many cases of poisoning.⁽⁴⁾

PURPOSE AND SCOPE OF POISONS IDENTIFICATION

1) POISONS LEADING TO CONSTRUCTION OF PUPIL

CLASSIFICATION OF POISONS BASED UP ON

Opium, organ phosphorous compounds, Tobacco (Small Doses) Carbolic Acid, Curare, Anesthetics, Alcohol.

- 1. Based on the type of Action.**
- 2. Medico legal Classification.**
- 3. Based upon the specific action on the body**

2) POISONS LEADING TO ALTERNATIVE CONSTRICTION AND DILATATION OF PUPIL : HIPPIUS REACTION)

Barbiturates, Aconite.

1) BASED ON THE TYPE OF ACTION

- CORROSIVES
- IRRITANTS
- NEUROTICS
- Cardiac Poisons
- Respiratory Poisons
- Miscellaneous Poisons.

3) POISONS LEADING TO DILATATION OF PUPIL:

Cyanides, Dhatura, Corrosives except carbolic acid, Alcohol (Initial Stage), Digitalis, Cannabis, Atropa Balladonna, Hyoscyamus, Nicotine (Large Doses) Anti Histamines, Strychnine.

2) MEDICOLEGAL CLASSIFICATION (7 GROUPS ARE MENTIONED UNDER THIS HEADING)

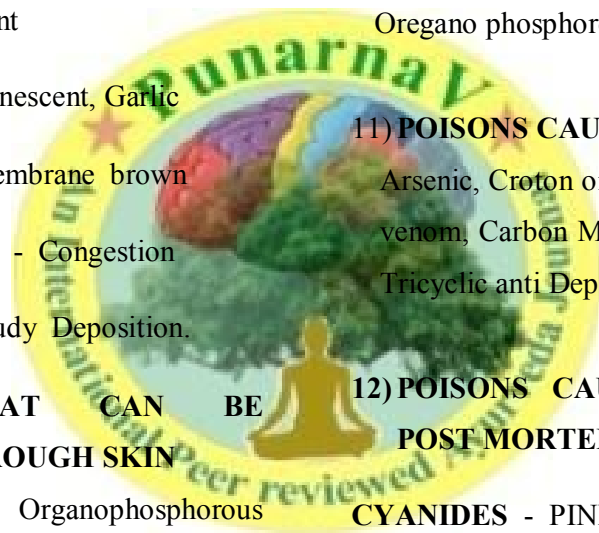
- SUICIDAL
- HOMICIDAL
- ACCIDENTAL
- STUPEFYING
- ABORTIFACIENTS
- CATTLE POISONS
- ARROW POISONS.

4) POISONS WITH CHARACTERISTIC SMELL:

Cyanides – Bitter Almond
Phosphorous – Garlick Oldour
Alcohol – Aromatic
Organophosphorous - Kerosene
Phenol - Phenolic
Opium - Raw flesh.

3) FURTHER CLASSIFICATION OF POISONS BASED UP ON THE SPECIFIC ACTION ON THE BODY

- 5) **POISONS LEADING TO CHARACTERISTIC MANIFESTATION IN STOMACH**
- (H₂SO₄) - **Sulphuric acid** - Black Coloured Carbonisation.
- (HNO₃) - **Nitric Acid** - Yellow Colour xanthine Pigmentation.
- Phenol** - Leather Bottle appearance.
- Arsenic** - Red velvety appearance.
- Copper Sulphate** - Bluish green, Haemorrhages, present
- Phosphorus** - Luminescent, Garlic
- Iodine** - Mucous membrane brown
- Organ phosphorous** - Congestion
- Oxalic Acid** - Cloudy Deposition.
- 6) **POISONS THAT CAN BE ABSORBED THROUGH SKIN**
- Corbolic Acid, Organophosphorous Compounds, Phosphorous, Nicotine, Arsenic, Lead, Mercury, Cyanides, Steroids.
- 7) **POISONING BY INHALATION:-**
- Anaesthetics, Asphyxiants, Nitric Acid, Corbolic Acid, Mercury, Nicotine.
- 8) **POISONS CAUSING CONVULSIONS:**
- Strychnine, Opium, DATURA in Children, Cobra
- 9) **POISONS USED AS ARROW POISONS:**
- Abrus precatorious, Aconite, Strychnine, calotropis.
- 10) **POISONS LEADING TO PRESENCE OF FROTH AT NOSE AND MOUTH:**
- Strychnine, Cyanides, Opium, DDT, Endrin, Carbon Monoxide, Barbiturates, Oregano phosphorous Compounds
- 11) **POISONS CAUSING BLISTERS:-**
- Arsenic, Croton oil, Marking Nut, viper venom, Carbon Monoxide, Barbiturates, Tricyclic anti Depressants, Iodine
- 12) **POISONS CAUSING TYPICAL POST MORTEM LIVIDITY:-**
- CYANIDES** - PINK
- OPIUM** - BLACK
- CO** - Bright cherry Red
- H₂S** - Bluish Green
- Phosphorous** – Dark Brown
- Potassium Chloride** - Chocolate Brown
- NITRITES** - Reddish Brown
- 13) **POISONS ACTING ON ENZYME SYSTEM:**



Phosphorous, Cyanides, Organo-phosphorous compounds,
Metallic poisons

Arsenic - MARSH Test, Reinsh Test,

Lead - Punctuate Basophilia

Opium - marquis' Test

**14) POISONS RESISTINGS
PUTREFACTION:**

Dhoture, Phosphorous, All Metals, Strychnine, Nicotine, EDRINE, DDT, Alcohol.

Alcohol - Mac ewans Test

Dhatura - MYDRIATIC Test

Co gas - Spectroscopic Test

15) POISONS STORED IN BODY AND THAT ARE RELEASED AFTER A FEW DAYS:

Organophosphorous Compounds, Organo Chlorous Compounds, Strychnine Theiopentone.

19) QUALITATIVE TESTS:

Usually the Test must be conducted within 2 hours of Poisoning.

16) POISONS CAUSING DRYNESS OF MOUTH:

Lead, Datura, Antihistamines, Antidepressants, Stimulants

S. No. TEST POISON DETECTED

1. **TRINDERS TEST** -- SALICYLATES

2. **FERRIC CHLORIDE TEST** -- PHENOLS.

3. **LEE JONES TEST** -- CYANIDES.

4. **QUALITATIVE DESFERRIOXAMINE** -- TOXIC LEVELS OF IRON

5. **COLOUR TEST**

6. **MEIXNER TEST** -- AMATOXIN(TOXIC MUSHROOMS)

7. **ISONITRILE TEST** -- CHLORINATED HYDRO CARBON

8. **TENSILON TEST** - BOTULISMS **MELZERS TEST** -TOXIC MUSHROOMS.

17) POISONS CAUSING EXCESSIVE SALIVATION:

Mineral acids, Croton Oil Seeds, Arsenic, Copper, Alcohol, Elapid Snakes (Cobra, Kriat, Coral Snakes), Organo Phosphorous Compounds, Anaesthetics, Aconite, Tobacco.

18) TESTS OF POISONING :

(H₂So₄) - Sulphuric Acid - Carbonisation

(HNO₃) - Nitric Acid - Xanthoproteic Reaction

Carbolic Acid – Green Urine

9. **THINLAYER**



10. CHROMATOGRAPHY -- POISONS
DIFFERENT TYPES OF

DISCUSSION

1. Forensic legal Medicine Deals with the application of medical knowledge to aid in the Administration of Justice.
2. Applying Medical Knowledge in deciding cases of injuries, murder, suicide, accidents, poisoning, rape, burns and unnatural Death all required Investigations, to find the criminal persons⁽⁵⁾
3. Forensic – Lab Investigations required proper organization like clinical Examination of victims of
4. assault like sexual crime, Drunkenness.
5. Pathological Science Investigations are also helpful for chemical analysis of like serology, Biology, Photography, Finger Prints and Ballistics etc.
6. Laboratory Investigations for finger prints, Bullets, cartridges, Hair follicles examination, Nails etc.
7. Collection of proper Information, preservation of viscera for investigations required.

CONCLUSION

1. The Diagnosis of poisoning in living and Dead Body is very Important.
2. History taking also plays an Important Role.
3. Examination and Evaluation of the patient in very Important.
4. Observing the external Symptoms.
5. Lab Investigation done thoroughly.
6. With all these Information and Investigations, able to identify the poison, weapon, Type of injury, Type of Death, any Crime, Suspicious cases and to catch the criminal person as per IPC and get proper Justification for so many Disputes (vyavahara)⁽⁶⁾ and serve the public properly for all types of controversies with the Help of Judiciary system etc.

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