



Position Paper

Towards A Standardised Classification Of Poisons For The Indian Sub-continent

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Abstract

It has always been a chaotic situation when it comes to classifying poisons. The very term 'poison' is itself a highly debatable issue when we need to define it scientifically. In fact, there is a move to replace this very ambiguous term with more precise alternatives, including 'toxic substance', 'toxicant', 'xenobiotic', etc. As these are basic matters of concern, it was felt that there is a real need to make an attempt to resolve them in the interests of medical students who are confused by such a lack of clarity.

The Indian Society of Toxicology constituted an Expert Committee to come up with a standardized system of classification poisons that can be uniformly followed all over the country. It is hoped that the new classification will be implemented in all medical colleges by the departments that deal with the subject of medical toxicology.

Introduction

There are many ways of classifying poisons depending upon the purpose: clinical, forensic, occupational, environmental, industrial, etc. It is impossible to have a single system of classification that will be suitable for all purposes. That would be like searching for one glove that fits all.

For medical students at the undergraduate level, the most appropriate classification of poisons would be one that is clinically oriented. It is also important that the list should be relevant to the local situation. This means that the poisons that are encountered in other parts of the world, but not commonly seen in India, must not be highlighted in the classification. It is also

pertinent to mention that as an undergraduate medical student is likely to branch out into other fields after passing the examination, which is not related to toxicology, any system of classification that is to be taught must contain only the most common poisons. An exhaustive list is not desirable, which however may be considered mandatory for postgraduate students of emergency medicine, or clinical medicine or even forensic medicine (as the latter includes a section on toxicology).

Methodology and Discussion

Taking into account all the above, the Indian Society of Toxicology decided to make a detailed survey of the existing literature pertaining to the classification of poisons as mentioned in widely read textbooks and other learning resources, and rectify anomalies, with the aim of creating a standardized system of classification of poisons that can be followed uniformly across the entire country.

Five teams of 3 experts each (listed as authors of this document), led by an experienced teacher of toxicology who would act as the leader, were constituted under an 'Expert Committee on Standardisation of Classification of Poisons (ECSCP)'. Their task was to analyse various textbooks on forensic medicine & toxicology that are followed widely by medical students and teachers, identify shortcomings or errors in the classification system described in the respective books, and formulate a revised system that was more appropriate. Each team was given a couple

of weeks' time, at the end of which a meeting was held to discuss the 5 different systems that had been created and meld all the lists of poisons into a single integrated classification.

The following was considered to be the best-consolidated list of poisons for undergraduate medical students in India, which is relevant, up-to-date, compact, and easy to remember:

INDIAN SOCIETY OF TOXICOLOGY'S CLASSIFICATION OF POISONS (TOXICANTS)

- **Corrosives**
 - o **Acids**
 - ◆ **Inorganic (Mineral) Acids:** Sulfuric, Nitric, Hydrochloric
 - ◆ **Organic Acids:** Acetic, Acetylsalicylic, Carbolic, Oxalic
 - o **Alkalies**
 - ◆ Ammonia
 - ◆ Salts of Sodium, Calcium, Potassium
- **Non-Corrosive Chemicals**
 - o **Heavy Metals**
 - ◆ Arsenic, Lead, Mercury, Copper, Iron, Thallium
 - o **Non-metallic Chemicals**
 - ◆ Phosphorus, Halogens
- **Organic Poisons (Toxins)**
 - o **Irritant Plants**
 - ◆ Castor, Calotropis, Abrus, Capsicum
 - o **Venomous Bites and Stings**
 - ◆ Snake, Scorpion, Spider, Bee, Wasp
- **Neurotoxic Poisons**
 - o **Cerebral**
 - ◆ Somniferous (Narcotics): Opium and Opiates
 - ◆ Inebriants (Intoxicants): Alcohols, Chloral Hydrate, Benzodiazepines
 - ◆ Deliriants: Datura
 - ◆ Stimulants: Caffeine, Amphetamines, Cocaine
 - ◆ Psychotropics (Mind Altering Drugs)
- **Antidepressants** : Tricyclics, MAOIs, etc.
- **Neuroleptics (Antipsychotics)**: Chlorpromazine, Haloperidol, etc
- **Hallucinogens (Psychedelics)** : Cannabis, LSD, Phencyclidine
 - o **Spinal**
 - ◆ Stimulant: Strychnine
 - ◆ Depressant: Gelsemine
 - o **Peripherally Acting** : Hemlock, Curare
- **Cardiovascular Poisons**
 - o **Antihypertensives**
 - o **Anti-arrhythmics**
 - o **Anticoagulants**
 - o **Cardiotoxic Poisons** : Aconite, Oleander, Odallum
- **Asphyxiant Gases (Toxic Inhalants)**
 - o **Simple Asphyxiants:** Carbon Dioxide, Nitrogen, Hydrocarbon Gases (Methane)
 - o **Respiratory Irritants** – Ammonia, Chlorine, Formaldehyde, Methyl Isocyanate
 - o **Systemic Asphyxiants** – Carbon Monoxide, Cyanide
- **Agrochemicals**
 - o **Pesticides**
 - ◆ Insecticides: Organophosphorus Compounds, Carbamates, Chlorinated Hydrocarbons
 - ◆ Insect Repellents: Pyrethroids, Naphthalene
 - ◆ Rodenticides: Zinc Phosphide, Bromadiolone
 - ◆ Herbicides: Paraquat, Glyphosate
 - o **Fumigants:** Aluminium Phosphide
 - o **Fertilizers**
- **Pharmaceuticals**
 - o **Hepatotoxic Drugs** : Paracetamol
 - o **Nephrotoxic Drugs** : NSAIDs
 - o **Anti-infective Drugs** : Antibacterials, Antivirals, Antifungals
 - o **Sedative-hypnotic Drugs** : Barbiturates
 - o **Anaesthetic Drugs** :
 - ◆ General Anaesthetics: Nitrous Oxide, Chloroform, Halothane
 - ◆ Local Anaesthetics: Lignocaine
 - o **Anticonvulsant Drugs** : Phenobarbitone, Phenytoin
- ◆ **Miscellaneous Poisons**
 - o **Food Poisons:** Microbes, Mushrooms, Plants, Fish, Chemicals

- o **Substances of Abuse:** Stimulants, Depressants, Hallucinogens, Designer Drugs
- o **Household Poisons:** Kerosene, Cleaning Agents, Cosmetics
- o **Riot Control Agents:** Tear Gases, War Gases
- o **Radioactive Agents**

As would be evident by studying the classification, obsolete/ uncommon substances have been eliminated, while newer/ more relevant substances have been included.

The system is also compact, and in order to make it easier for students to recall the 9 major categories, a mnemonic was generated: *Can Nasty Old Nazi Choose An African Prime Minister?*

This quirky but catchy mnemonic stands for the following –

Corrosives
Non-corrosives
Organics
Neurotoxic
Cardiovascular
Asphyxiants
Agrochemicals
Pharmaceuticals
Miscellaneous

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Conclusion

The Indian Society of Toxicology will be circulating the new system of classification of poisons to all the departments in medical colleges across India that deal with poisons/poisoning, and/or teach the subject of medical toxicology to undergraduate medical students, with a request to incorporate it and help achieve its goal of creating a single, uniform system that can be implemented all over the country. This will eliminate confusion arising from multiple methods of classifying poisons as it exists now, making it easier for teachers to teach, students to learn, and examiners to ask questions.

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