UNIT-XII

Introduction To Toxicology

Toxicology is defined as the study of the adverse effects of chemicals on living organisms.

Toxicity

Toxicity is defined as the inherent capacity of a chemical to cause injury. All the chemicals, drugs have some degree of toxicity. All substances are poison there is none, which is not a poison. The right dose differentiates a poison from a remedy.

Toxicity may occur in three general ways

1. **Accidental**
2. **Intentional**
3. **Adverse Drug Reactions**

Accidental ingestion occurs most commonly in children. Intentional over dosage often with suicidal attempts, whereas adverse drug reactions occurs due to any wrong therapy.

Toxic Actions Of Chemicals

Toxic chemicals from the environment may contact the skin or absorbed after ingestion or inhalation. A chemical toxin can potentially affect any tissue or organ within the body.

Occupational And Specific Environmental Toxin

Occupational and specific environmental toxicity is caused by many types of toxic substances like Chloroform, Aromatic hydrocarbon, Alcohols, Pesticides, Heavy metals, Gases and inhaled particles,

Treatment

We can use three types of treatment in toxicity

1. **Supportive care**
2. **Decreasing the quantity of drug absorption**
3. **Enhancing drug elimination**

Supportive Care

Supportive care is first line treatment. The most important advance in the management of drug over doses was the replace the use of protected airway, mechanical ventilation and support of the circulations. With the excretion of a few intoxication that require a specific therapeutic approach, good supportive care alone will ensure a positive outcome in most patients.

Decreasing The Quantity Of Drug Absorption

Three types of procedure are widely used to decrease GI absorption of orally ingested poisons.

These procedures are called

1. **Induced emesis (vomiting)**
2. **GI lavage (washing out stomach)**
3. **Instillation of activated charcoal**

Enhancing Drug Elimination

Poisons normally are eliminated by hepatic biotransformation, renal excretion, or a combination of these mechanisms. We can enhance drug elimination by using forced dieresis, hemodialysis and hemoperfusion.

Antidotes

Antidotes are drugs that counteract the effect of a poison or have over dosage by another drug. Specific chemical antidotes for poisoning exist for only a small number of chemicals or classes of chemicals.

These Antidotes Perform Following Functions

- **Accelerate detoxification of toxic agent**
- **Pharmacological antagonize toxication**
- **Reduce metabolic activation**
- **Provide alternative target**
- **Chelators**