

## UNIT - 5

### Principles of toxicology:-

It is define as the branch of science which deals with study of poisonous effects of drugs and other chemical with detection prevention and treatment of poisoning & also to study adverse effect of drug.

Adverse effect - It is the undesirable and unintended effect of drug. It is categorized into 2

#### (1) predictable (type A reaction) -

It constitute 80% of adverse drug reaction. It is mainly the consequence primarily pharmacological effect of the drug or low low therapeutic effect on a index of the drug.

#### (2) Non predictable (type B reaction)

These are idiosyncratic (असंभव रूप से) or novel response that can not be predicted from the kinetics pharmacology of the drug.

#### Side effect -

These are the unwanted & unavoidable effect at therapeutic dose.

→ Toxic effect may result give to the over dose of the drug.

## Toxicity test -

- ⇒ Acute toxicity can be detected within 14 days.
- ⇒ Sub acute toxicity detected the 28 day
- ⇒ chronic toxicity detected the 6 month.

Special " carcinogen

~~test~~

## use of SubAcute toxicity test :-

- ⇒ To discover new and unanticipated effect of drug.
- ⇒ To determine LD<sub>50</sub> dose.
- ⇒ Regulatory authority need data on acute toxicity for the study of the drug on human.

## Acute toxicity -

- ⇒ Toxicity produced by the single or multiple dose within 24 hour

Acute toxicity test - This test is performed in those animal in which the single dose of the drug on different occasion (3rd to 2nd) symptom include -  
~~Sympt~~ Symptom tumor, muscle spasm, conversion.

- ⇒ Sub acute toxicity is an adverse effect occurring as related of repeated & daily dose of a chemical over a period of several week it is design to evaluate the potential of new drug. It is to determine the of any chemical

chronic toxicity → It is define as the toxicity which develop after the repeated or continuous administered of test sample for the major part of the life span. (life-span)

### Objective the chronic toxicity-study —

- To determine the toxicity of the observing changing the function shape of a living organism.
- Effect of any particular drug on reproduction and on future generation
- ⇒ To determine the damage to the birth the fetus.
  - ⇒ To determine the carcinogenicity of a drug future generation.

### Genotoxicity —

### Genotoxicity —

⇒ Genotoxicity a word genetics which is define a disruptive effect on cells genetic material genotoxicence causes mutation and they include the both radiation & chemical & they are responsible for genotoxicity.

= Classification of carcinogen - ~~factories~~ .

Teratogenicity - अतिक्रमिति का गतिशीलता वाला विष

Categories-1 - It shows an cause cancer in human Categories to cause cancer

Categories-2 - cause cancer in animal & most probably to human also

Categories-3 - They are carcinogen but evidence support in carcinogenicity in human do not exist.

Agent Capable of causing DNA damage.

- ⇒ UV Radiation
- ⇒ Reactive oxygen species topo isomers
- = inhibits protein synthesis
- ⇒ electrophilic specific form covalent bond with DNA

! Carcinogenicity:-

⇒ It is the ability or tendency of the chemically to induce tumour or cancer, carcinogen may be chemical substance physical agent or any biological agent (any virus)

Teratogenicity -

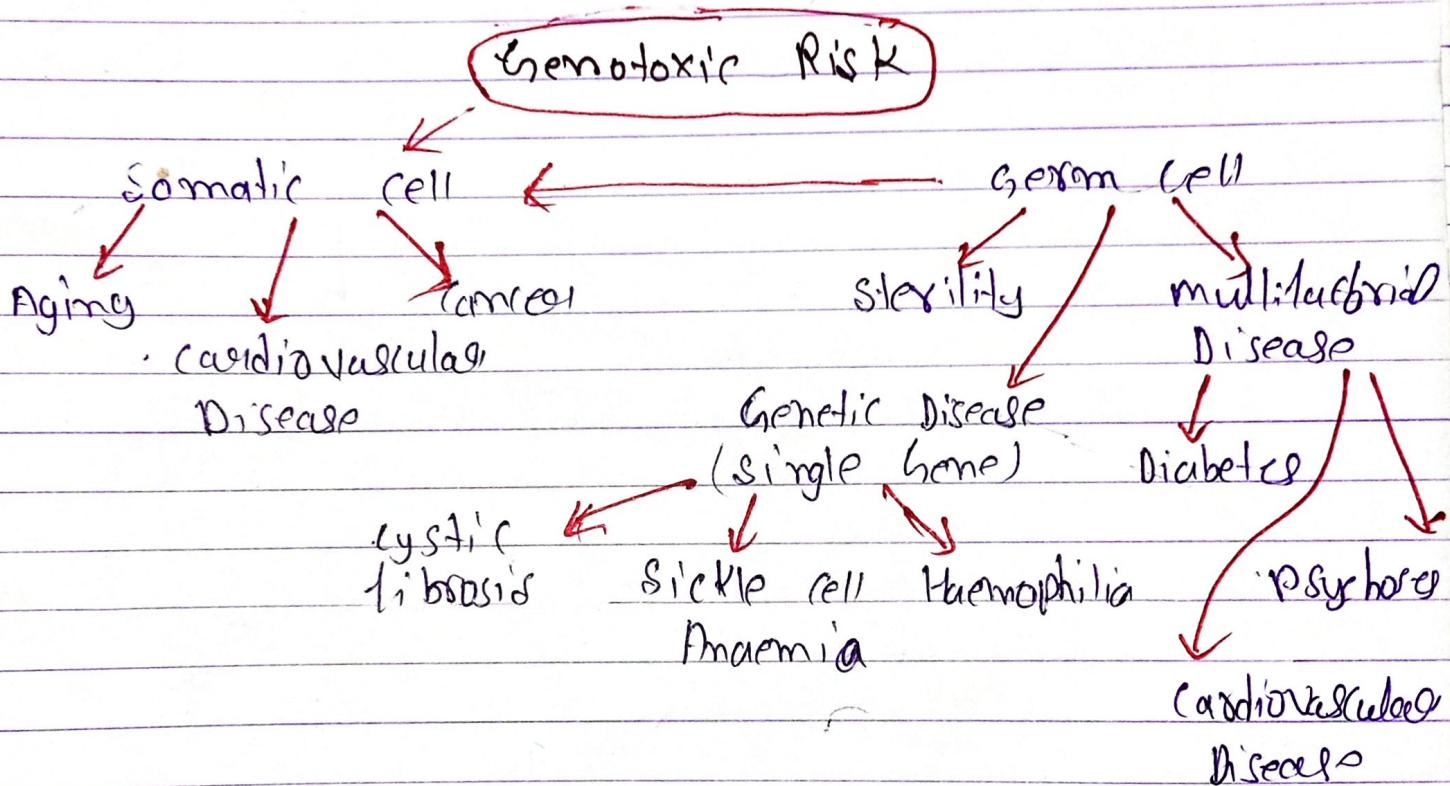
It is the reproductive toxicity broadly referred to occurrence of biologically adverse effect on the reproductive system

## Genotoxicity -

Genotoxic substance can be described as all chemicals that produce DNA damage leading to mutation or cancer.

Genetic material including DNA & RNA which thereby affect integrity.

Thus genotoxins can be defined as mutagens that cause genotoxicity resulting in damage of DNA.



## Mechanism of Genotoxicity -

The genotoxic substances provoke damage to the genetic material in the cells through exchanges with the DNA sequence & structure. For ex - the transition metal chromium interacts with

DNA in its high valent oxidation state to incur DNA lesions leading to carcinogenesis.

A research performed to study the interface between DNA with carcinogenic chromium by using a  $\gamma(V)$  salen complex at the specific oxidation state.