



“बेटी बचाओ, बेटी पढ़ाओ”

JAYOTI VIDYAPEETH WOMEN'S UNIVERSITY, JAIPUR

Faculty of FPD

Faculty Name- **JV'n SMRITI (Assistant Professor)**

Program- 7th Semester

Course Name - BMLT

Session No. & Name – 2023- Toxicology

Academic Day starts with –

- Greeting with saying ‘**Namaste**’ by joining Hands together following by 2-3 Minutes Happy session, Celebrating birthday of any student of respective class and **National Anthem**.

Lecture Starts with-

Review of previous Session- Oncofoetal antigen

Topic to be discussed today- Today We will discuss about the toxicology and what is the effect of toxicology.

- University Library Reference- satyanarayan, godkar, Lehnninger.

National song’ Vande Mataram’

TOPIC:- Toxicology

The traditional definition of toxicology is "the science of poisons." As our understanding of how various agents can cause harm to humans and other organisms, a more descriptive definition of toxicology is "the study of the adverse effects of chemicals or physical agents on living organisms". Adverse effects may occur in many forms, ranging from immediate death to subtle changes not realized until months or years later. They may occur at various levels within the body, such as an organ, a type of cell, or a specific biochemical. Knowledge of how toxic agents damage the body has progressed along with medical knowledge. It is now known that various observable changes in anatomy or body functions actually result from previously unrecognized changes in specific biochemicals in the body.

Toxic agent or substance

Toxic agent is anything that can produce an adverse biological effect. It may be chemical, physical, or biological in form. Toxic agents may be: chemical (such as cyanide), physical (such as radiation) and biological (such as snake venom). Toxic substance is simply a material which has toxic properties.

A toxic agent is anything that can produce an adverse biological effect. It may be chemical, physical, or biological in form. For example, toxic agents may be chemical (such as cyanide), physical (such as radiation) and biological (such as snake venom). A distinction is made for diseases due to biological organisms. Those organisms that invade and multiply within the organism and produce their effects by biological activity are not classified as toxic agents.

An example of this is a virus that damages cell membranes resulting in cell death. If the invading organisms excrete chemicals which is the basis for toxicity, the excreted substances are known as biological toxins. The organisms in this case are referred to as toxic organisms. An example is tetanus. Tetanus is caused by a bacterium, *Clostridium tetani*. The bacteria *C. tetani* itself does not cause disease by invading and destroying cells. Rather, it is a toxin that is excreted by the bacteria that travels to the nervous system (a neurotoxin) that produces the disease.

A toxic substance is simply a material which has toxic properties. It may be a discrete toxic chemical or a mixture of toxic chemicals. For example, lead chromate, asbestos, and gasoline are all toxic substances. Lead chromate is a discrete toxic chemical. Asbestos is a toxic material that does not consist of an exact chemical composition but a variety of fibers and minerals. Gasoline is also a toxic substance rather than a toxic chemical in that it contains a mixture of many chemicals.

Toxic substances may not always have a constant composition. For example, the composition of gasoline varies with octane level, manufacturer, time of season, etc. Toxic substances may be organic or inorganic in composition.

Systemic or organ toxins Systemic or organ toxins

A systemic toxin is one that affects the entire body or many organs rather than a specific site

An organ toxin is one that affects only specific tissues or organs.

Factors determining adverse effects

Factors determining adverse effects

intrinsic toxicity dose

exposure conditions

response of host

Intrinsic toxicity Intrinsic toxicity

Chemical properties

molecular structure & functional groups solubility
solubility - insolubility volatility stability (light, water, acids, enzymes,
stability (light, water, acids, enzymes, ...) reactivity Physical properties gas (density,
gas (density, ...) liquid (vapour pressure, liquid (vapour pressure, ...) solid (crystal structure,
size, shape, solid (crystal structure, size, shape, ...)