

Chemical Toxicity

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ABSTRACT

Toxicity is that the degree to which a chemical substance or a specific mixture of drugs can damage an organism.[1] Toxicity can ask the effect on an entire organism, like an animal, bacterium, or plant, also because the effect on a substructure of the organism, like a cell (cytotoxicity) or an organ like the liver (hepatotoxicity). By extension, the word could also be metaphorically went to describe toxic effects on larger and more complex groups, like the relatives or society at large. Sometimes the word is more or less synonymous with poisoning in everyday usage.

Keywords: Chemical activity: Dosage

INTRODUCTION

In some instances, individuals can have unpredictable reactions, or idiosyncratic responses, to a drug or other substance. An idiosyncratic response is rare, and it's sometimes impossible to know whether it's the results of a genetic predisposition or has another cause like the status of the system. It could end in an abnormally small or short, or abnormally large or long response to the drug or other substance. Or, the response might be qualitatively different than what has been observed in most other individuals.

The toxicity of a substance usually depends on the subsequent factors:

- Form and innate chemical activity
- Dosage, especially dose-time relationship
- Exposure route
- Species
- Life stage, like infant, young adult, or elderly adult
- Gender
- Ability to be absorbed
- Metabolism
- Distribution within the body
- Excretion
- Health of the individual, including organ function and pregnancy, which involves physiological changes that would influence toxicity
- Nutritional status

- Presence of other chemicals
- Circadian rhythms (the time of day a drug or other substance is administered)

The form of a substance may have a profound impact on its toxicity especially for metallic elements, also termed heavy metals. For instance, the toxicity of mercury vapour differs greatly from methyl mercury. Another example is chromium. Cr³⁺ is comparatively nontoxic whereas Cr⁶⁺ causes skin or nasal corrosion and carcinoma.

The innate chemical activity of drugs also varies greatly. Some can quickly damage cells causing immediate necrobiosis. Others slowly interfere only with a cell's function. For instance:

Hydrogen cyanide binds to the enzyme cytochrome oxidase leading to cellular hypoxia and rapid death. Nicotine binds to cholinergic receptors within the central nervous system (CNS) altering nerve conduction and inducing gradual onset of paralysis.

CONCLUSION

The health of a private or organism can play a serious role in determining the amount and kinds of potential toxicity. For example, a private may have pre-existing kidney or disease. Certain conditions, like pregnancy, are also related to physiological changes in kidney function that would influence toxicity.

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