



Toksikologi Pakan: Overview



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Introduction

Toxic substance vs toxic effect:

- Toxic substances induce toxic effect.
- A toxic substance will induce a toxic effect only if its concentration is sufficiently high.

Principle:

Everything is poison. There is nothing without poison. Only the dose makes a thing not a poison. For example, every food and every drink, if taken beyond its dose, is poison.

Definition of toxin or toxicant:

A substance that has been shown to present some significant degree of possible risk when consumed in sufficient quantity by humans or animals.



Terms in toxicology

- Acute toxicity: a toxic response, often immediate, induced by a single exposure.
Defined by LD_{50} : the dose of the substance that will kill 50% of a group of exposed animals.
- Chronic toxicity: an effect that requires some time to develop, for example, cancer.
 TD_{50} : the amount of a carcinogen required to induce cancer in 50% of a group of exposed animals.



- Subchronic feeding test: a ninety day toxicology study in an appropriate animal species.

MTD (maximum tolerated dose): the highest level of a test substance that can be fed to an animal without inducing obvious signs of toxicity.

NOAEL (no observable adverse effect level): for substances that induce a toxic response (other than cancer) in chronic feeding tests, the NOAEL is used to determine an acceptable daily intake (ADI).

ADI (acceptable daily intake): by convention, for noncarcinogens, it is set at 1/100 of the NOAEL.



Sources of toxins

Sources of toxins:

- Pollutants derived from burning of fossil fuels, radionuclides from fallout, or emissions from industrial processing (toxic trace elements, radionuclides, polycyclic aromatic hydrocarbons, dioxins).
- Components of packaging material and of other frequently used products (monomers, polymer stabilizers, plasticizers, polychlorinated biphenyls, cleansing/washing agents and disinfectants).
- Residues of plant-protective agents (pesticides, herbicides, fungicides, insecticides).
- Residues from livestock and poultry husbandry (veterinary medicinals and feed additives; e.g. antibiotics, antihelmintics, coccidiostats).
- Plant secondary compounds.
- Toxic metabolites of microorganisms (enterotoxins, mycotoxins).

Outline

- A. Overview
 - B. Tannins
 - C. Saponins
 - D. Alkaloids
 - E. Phorbol esters
 - F. Nitrate and nitrite
 - G. Trypsin inhibitor
 - H. Phytic acid
 - I. Gossypol
 - J. Cyanogenic glucosides
 - K. Mycotoxin 1
 - L. Mycotoxin 2
 - M. Mycotoxin 3
 - N. Mycotoxin 4
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Thank you for your attention!





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