

S32. An overview on dimethoate toxicity and human health

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The aim of this review is to inform that dimethoate has toxic effects in humans. There has been growing concern about the excessive use of pesticides, the consequent environmental pollution and toxic effects on human health. Dimethoate, which is one of the most important organophosphorus pesticides, is frequently used in agriculture against a wide range of insects and mites as both a systemic and a contact pesticide. For humans, the main risk groups of higher-dose dimethoate exposure are pesticide producers, pesticide workers and farm owners. The extensive use of dimethoate poses a health hazard to humans because of its persistence in soil, crops, and cow's milk. Majority of population is exposed to lower doses of dimethoate via food, contaminated drinking water, or by application of household insecticides containing dimethoate. The mechanism of the toxic action of dimethoate is one of inhibiting the acetylcholinesterase activity, leading to accumulation of acetylcholine and subsequent activation of cholinergic, muscarinic and nicotinic receptors. Recent studies have also demonstrated that acute and subchronic exposure to dimethoate causes to oxidative stress through generation of free radicals and induction of lipid peroxidation. As a result, it has been reported the toxicity of dimethoate results in deleterious effects on many organs and systems in human and other mammals such as the liver, kidney, pancreas, brain, nervous system, immune system and reproductive system. The WHO and US EPA have placed dimethoate in "Toxicity class II," a moderate toxicant. However, the International Agency for Research on Cancer was unable to classify dimethoate with regard to its potential carcinogenicity due to the inadequacies of existing studies. The information on the genotoxic properties of dimethoate is limited and inconsistent. In this presentation, the toxicity of dimethoate exposure on human health were discussed briefly.

Keywords: Pesticide, dimethoate, health, toxicity