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Adverse Effects of Natural Pesticides on Human and Animals: An Experimental Analysis

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Abstract : Synthetic pesticides are widely used in large-scale worldwide for control pests in agriculture and public health sectors in both developed and developing countries. Although the positive role of pesticides, they have many adverse toxic effects on humans, animals, and the ecosystem. Therefore, in the last few years, scientists have been searching for new active compounds from natural resources as an alternative to synthetic pesticides. Currently, many commercial natural pesticides are available commercially worldwide. These products are recommended for uses in organic farmers and considered as safe pesticides. This paper focuses on the adverse effects of natural pesticides on mammals. Available commercial pesticides in the market contain essential oils (e.g. pepper, cinnamon, and garlic), plant extracts, microorganism (e.g. bacteria, fungi or their toxin), mineral oils and some active compounds from natural recourses e.g. spinosad, neem, pyrethrum, rotenone, abamectin and other active compounds from essential oils (EOs). Some EOs components, e.g., thujone, pulegone, and thymol have high acute toxicity (LD50) is 87.5, 150 and 980 mg/kg. B.wt on mice, respectively. Natural pesticides such as spinosad, pyrethrum, neem, abamectin, and others have toxicological effects to mammals and ecosystem. These compounds were found to cause hematotoxicity, hepato-renal toxicity, biochemical alteration, reproductive toxicity, genotoxicity, and mutagenicity. It caused adverse effects on the ecosystem. Therefore, natural pesticides in general not safe and have high acute toxicity and can induce adverse effects at long-term exposure.

Keywords : natural pesticides, toxicity, safety, genotoxicity, ecosystem, biochemical
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