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PESTICIDE CONTAMINATION OF HONEY

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Honey is a natural product, the composition, aroma, taste and color of which depend on the type of plant, geographical regions, climate and species of honey bees. The product contains carbohydrates, minerals, amino acids, vitamins, volatile chemicals, phenolic acids, flavonoids, and carotenoid-like substances (Size, 2022), thanks to which honey is used as a sweetener, anti-inflammatory, antioxidant and antimicrobial agent. Pesticides are a significant threat to the quality and safety of honey (Fikadu, 2020). The direct interaction of bees and the nectar of pollinated plants is a source of pesticides entering honey (Belsky, & Joshi, 2020). Pesticides are considered persistent organic pollutants and can persist in the environment through bioaccumulation and biomagnification in ecosystems, have chronic toxicity properties (Gupta, & Gupta, 2020) due to their carcinogenicity, neurotoxicity, adverse growth, endocrine disruption, or respiratory effects (Mejías, & Garrido, 2022). To determine the concentration of pesticides in honey, solid-phase and dispersion extraction, spectrometric and chromatographic analysis are used.

Data on bactericides, rodenticides and larvicides are rarely reported in the literature, as most studies on this topic have focused on the effect on the honey bee as a key insect (Gupta, & Gupta, 2020), however, the ability of organochlorine compounds to bioaccumulate can lead to lethal and sublethal effects for consumers. About 92 types of pesticides are recorded in commercial honey. Their presence is associated with the possibility of deterioration of sperm quality (organophosphorus pesticides) and a high risk of infertility in women (organochlorine type). Consumption of honey containing lindane may be associated with miscarriages, delayed implantation, shortened menstrual cycles, and even prostate cancer.

Currently, acaricides and fungicides have in common the fact that they are insecticides, the mechanism of action of which is to inhibit the enzyme acetylcholinesterase or one of its types of receptors (nAChRs), causing an adverse effect on the nervous system of certain organisms under study. Another group includes associations of chemical compounds classified as insecticides and neonicotinoids. When using this or that pesticide in your activities, you should understand their impact on the environment and possible toxicity and bioaccumulation in the human body and bees

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