

REVIEW ARTICLE



Pyrethroid based pesticides – chemical and biological aspects

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ABSTRACT

Human and animal welfare primarily depends on the availability of food and surrounding environment. Over a century and half, the quest to identify agents that can enhance food production and protection from vector borne diseases resulted in the identification and use of a variety of pesticides, of which the pyrethroid based ones emerged as the best choice. Pesticides while improved the quality of life, on the other hand caused enormous health risks. Because of their percolation into drinking water and food chain and usage in domestic settings, humans unintentionally get exposed to the pesticides on a daily basis. The health hazards of almost all known pesticides at a variety of doses and exposure times are reported. This review provides a comprehensive summation on the historical, epidemiological, chemical and biological (physiological, biochemical and molecular) aspects of pyrethroid based insecticides. An overview of the available knowledge suggests that the synthetic pyrethroids vary in their chemical and toxic nature and pose health hazards that range from simple nausea to cancers. Despite large number of reports, studies that focused on identifying the health hazards using doses that are equivalent or relevant to human exposure are lacking. It is high time such studies are conducted to provide concrete evidence on the hazards of consuming pesticide contaminated food. Policy decisions to decrease the residual levels of pesticides in agricultural products and also to encourage organic farming is suggested.

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1. Introduction

1.1. Literature review methodology

This review is a compilation of scientific material on the physical, chemical and biological aspects of pesticides to benefit the researchers working in the area of pesticide toxicology. Thus, it is to be noted that this is not a systematic review prepared keeping a specific aspect in focus. Information required to prepare this review was collected by searching multiple sources (PubMed, Google Scholar, Google and SCOPUS). The review was prepared by consulting different kinds of scientific material that are related to pesticide chemistry and toxicity. The methodology used to collect scientific material and the inclusion and exclusion criteria adopted in selecting the requisite material to compile this review is presented in [Supplementary Table 1](#). The inclusion criteria was to select research articles (animal, human and