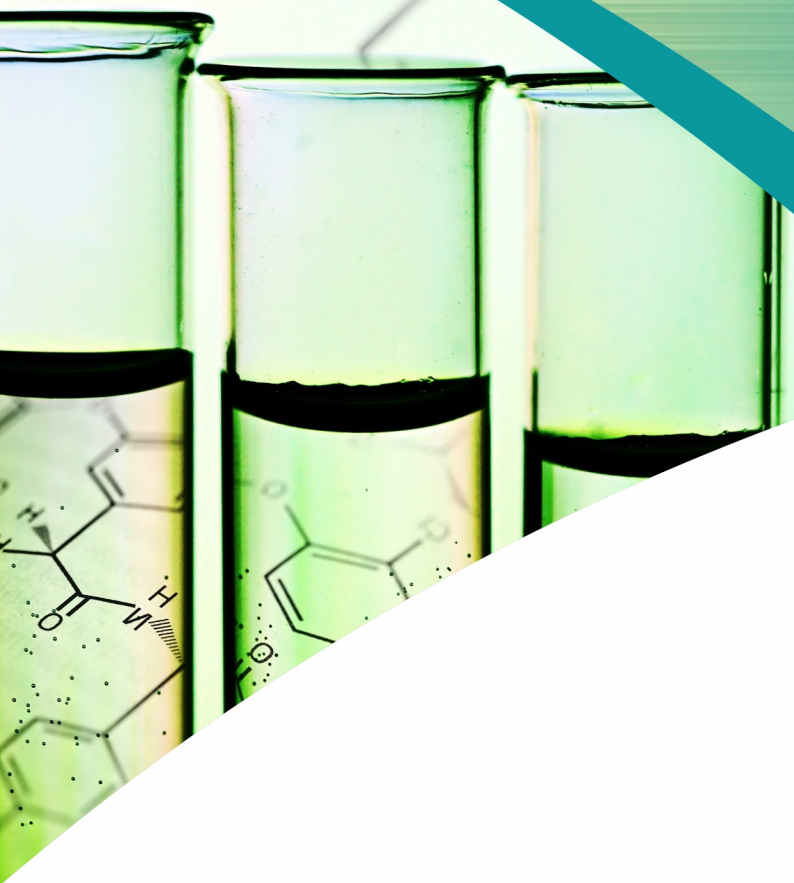


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**Disclaimer:**

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# Principal Component Analysis (PCA) Based Clustering of Insecticides for Their Safety Profile

Afshan<sup>1</sup> and S. Raisuddin<sup>1</sup>

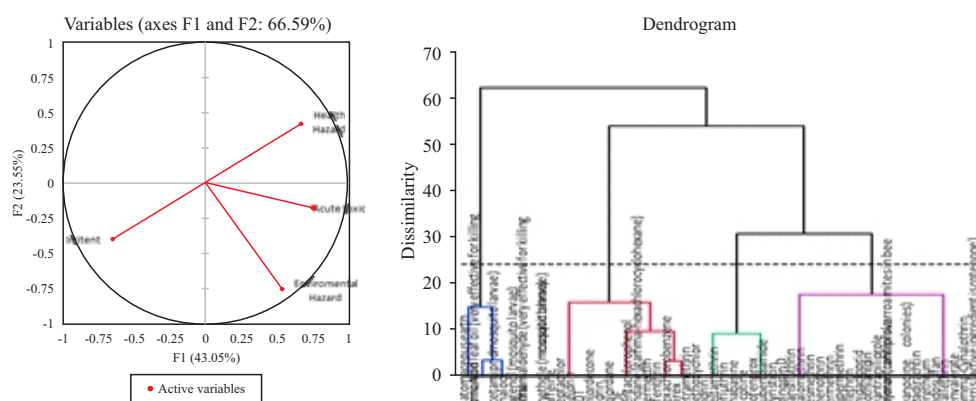
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## ABSTRACT

**Background:** Insecticides are the groups of chemical substances used to control the pest in agriculture crops, and the vector of animal and human diseases. At the point when man originally began to develop crops, the main alternatives for pest control were the manual evacuation of pest or physical assurance from pervasion, and this remained so until insecticidal substances, for example, arsenic and copper were utilized, trailed by the primary accessibility of engineered mixes during the 1940s.

**Objective:** Statically analysis of commonly used insecticides for their safety profile.

**Methods:** Through a literature survey we analyzed different insecticides used for different purposes, their library was prepared consisting of around 60 insecticidal compounds of different classes, their canonical structure, PubMed id, and safety profile in terms of acute toxicity, irritant, health hazard, and environmental hazard were fetched from PubMed (<https://pubchem.ncbi.nlm.nih.gov/>). We assigned 0 for absence and 1 for the presence of different safety parameters (acute toxicity, irritant, health hazard, and environmental hazard) in the selected insecticides. Trail version XLSTATE software was downloaded from the website (<https://www.xlstat.com/en/>), PCA analysis was carried out on the prepared dataset



**Results:** PCA analysis shows that environmental hazards are the most common problem with the application of insecticides.

**Conclusion:** Applications of insecticide are very common for agriculture and household purposes; degradation of insecticides in soil by various mechanism e.g. microbial degradation is a major challenge which results in the prevalence of sub-chronic toxicity in animals as well as humans.



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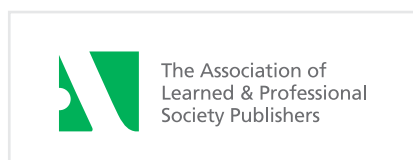
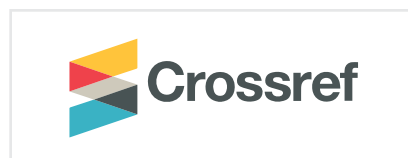
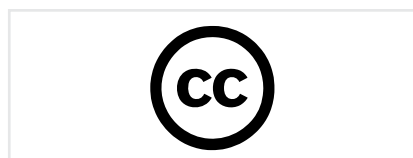
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