

عنوان مقاله:

Bioactivity of medicinal plant extracts as toxicants and enzyme inhibitors against insect pests of stored commodities

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خلاصه مقاله:

The present research was performed to evaluate the bioactivity of *Citrullus colocynthis* (L.) and *Melia azedarach* L. extracts against three major stored grain insect pests including *Tribolium castaneum* (Herbst), *Trogoderma granarium* Everts, and *Sitophilus granaries* (L.). Toxicity and enzyme inhibition activity of acetylcholinesterase (AChE), α -carboxylesterase (α -CE), β -carboxylesterase (β -CE), acid phosphatases (ACP) and alkaline phosphatases (ALP) in three insect species induced by both plant extracts were evaluated at four different dose rates viz., 5, 10, 15 and 20%. Results showed maximum mortality (34.29%) in *S. granarius* with *M. azedarach* at maximum interaction of time and dilution level. In *T. castaneum* and *T. granarium* maximum recorded values for mortality were 30.87% and 18.95%, respectively, with extract of *M. azedarach*. Plant extract of *C. colocynthis* reported a maximum mortality of 21.92%, 19.18% and 16.89% in *T. castaneum*, *S. granarius* and *T. granarium*, respectively. Findings proved that both plant extracts had decent lethal impacts on tested insect species. Exposure of studied insects to plants extracts also resulted in significant inhibition of AChE, α -CE, β -CE, ACP and ALP. All tested enzymes in three insects were maximally inhibited by plant extract of *M. azedarach* except α -CE which was slightly more inhibited in *S. granarius* and ACP which was highly inhibited in *T. granarium* and *S. granarius*, by plant extract of *C. colocynthis*. Outcomes exhibit that plant based extract of *M. azedarach* is more pronounced in stored grain insect pests and propose the capability of using these plant extracts for safety of stored commodities as a safe substitute for insecticides.

کلمات کلیدی:

stored product pests, enzyme inhibition, lethal effects, toxicity

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