Abstract

The biological activity of camphor, a major component of essential oil of the basil shrub, Ocimum kilimandscharicum, against the beetles, Sitophilus granarius, S. zeamais, Tribolium castaneum and Prostephanus truncatus, was investigated in the laboratory using contact toxicity, grain treatment and repellency assays. Camphor applied either topically, impregnated on filter papers or whole wheat and maize grains was highly toxic to all the four species. Beetle mortality was dosage-dependent with the highest doses of 100 mg/ filter paper and 100 mg/insect evoking over 93% and 100% mortalities, respectively, in S. granarius, S. zeamais and P. truncatus after 24 h exposure. Similar doses induced 70% and 100% mortality in T. castaneum. Camphor impregnated on the grain surface was more effective than on filter paper. There was, however, highly significant reduction in toxicity in grain after only 24 h following treatment. Development of eggs and immature stages within grain kernels, as well as progeny emergence, was completely inhibited in camphor-treated grain. Camphor was also highly repellent to the beetles with overall repellency in the range of 80 - 100%. The potential use of suitable products derived from O. kilimandscharicum as supplementary or alternative grain protectants against insect damage in traditional grain storage in developing countries is discussed.