

BIOACTIVITY OF CAMPHOR, A MAJOR COMPONENT OF
ESSENTIAL OIL OF *OCIMUM KILIMANDSCHARICUM*
AGAINST *SITOPHILUS ZEAMAI*S AND
PROSTEPHANUS TRUNCATUS

D. OBENG-OFORI¹, C. REICHMUTH¹, A. J. BEKELE² & A. HASSANALI²

¹Federal Biological Research Centre for Agriculture and Forestry,
Institute for Stored Product Protection, Berlin Germany

²International Centre of Insect Physiology and Ecology P.O. Box 30772 Nairobi, Kenya

The use of locally-available plant materials to limit insect damage in stored foodstuffs is a common practice in traditional farm storage in developing countries. *Ocimum* plants grow widely in India and many parts of eastern and southern Africa and are traditionally used for the treatment of various ailments and as insect repellents against mosquitoes. Some local farmers also mix stored foodstuffs with dry leaves of *Ocimum kilimandscharicum* for protection against insect pest damage in storage. The present study determined the scientific basis for this practice by identifying and assessing the biological activity of its major essential oil component against two major stored product beetle pests in the humid tropics. The essential oil extract was isolated by steam distillation from leaves, inflorescences and succulent stems of *Ocimum kilimandscharicum* (Labiatae) in Kenya. The extract was analysed by GC-MS techniques and its constituent compounds were identified by spectral comparison with synthetic standards. Camphor was identified as the major component comprising over 70% of the total collection. The biological activity of camphor against *S. zeamais* and *P. truncatus* was evaluated in the laboratory by contact toxicity, grain treatment and repellency assays. Camphor applied topically or impregnated on whole wheat and maize grains was highly toxic to both species inducing 100% mortalities within 24 h. Camphor-impregnated glass pebbles were equally toxic to the beetles. Development of eggs and immature stages of beetles within grain kernels as well as progeny emergence were completely inhibited in camphor treated grain. Camphor was also highly repellent to both species with overall repellency in the range of 80–100%. There was, however, a highly significant loss of toxicity after only 24 h following treatment.