

The use of semiochemicals for stored product protection

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Post-harvest, plant products are stored for a certain time period to ensure a continuous and season-independent food supply. During storage, the goods are highly vulnerable to infestation by microorganisms and insects. In case of a mass propagation of a stored product pest, the means of choice are inorganic insecticidal gases and contact insecticides. Due to the cumulated occurrence of resistances against commonly used pesticides as well as a growing awareness on the environmental risks and consequences of intensive pesticide use, biological and biotechnical approaches to counter stored product pests experience an increasing demand.

Semiochemicals, substances that mediate the communication of an organism with its environment, can be exploited to monitor, decimate and combat insect pests in an environmentally sustainable way. Using different methods of natural product

analytics like Gas Chromatography coupled to Flame Ionization Detection (GC-FID), Mass Spectrometry (GC-MS), or Electroantennographic Detection (GC-EAD), our group at the JKI Berlin aims to identify new food attractants, insect pheromones, and plant-derived insect repellents that can be utilized in stored product protection.

Several headspace methods, like Needle-Trap Device (NTD), Solid-Phase

Microextraction (SPME) and Closed-Loop Striping Analysis (CLSA) are implemented to trap and enrich the respective volatiles *in situ*. Behavioral assays, e. g. in flight chambers, y-olfactometers and 4-field walking arenas, complement the analytical findings and verify the biological activity of the isolated compounds. The poster presents the application potential of the different insect semiochemicals as well as the experimental methods used in our group.