

RESUMEN DEL SEGUNDO SEMINARIO INTERNACIONAL DE SANIDAD AGROPECUARIA (SISA)

Chemical composition and bioactivity of *Citrus aurantifolia* and *Citrus reticulata* peel oils and enantiomers of their major constituents against *Sitophilus zeamais*

Composición química y bioactividad de aceites de corteza de *Citrus aurantifolia*, *Citrus reticulata* y enantiomeros de sus componentes mayoritarios sobre *Sitophilus zeamais*

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Peel oils from *Citrus aurantifolia* and *C. reticulata* cultivated in the Northeast of Brazil were analyzed by GC-FID (Gas Chromatography with Flame Ionization Detection) and GC-MS (Gas Chromatography Mass Spectrometric Detection). Their insecticidal activities and both of the enantiomeric forms of the main constituent limonene [(R)-(+)-Limonene and (S)-(-)-Limonene] were evaluated against *Sitophilus zeamais* under laboratory conditions. Results were compared with deltamethrin (K-obiol 25 CE) as a positive control. Chromatographic analysis of *Citrus* oils showed limonene as the main constituents, with 38.9% in *C. aurantifolia* and 80.2% in *C. reticulata*. Peel oil of *C. reticulata* proved to be more toxic than *C. aurantifolia* oil towards *S. zeamais* adult by contact, ingestion and fumigant tests ($LC_{50} = 71.18 \mu\text{L mL}^{-1}$, $LC_{50} = 1.52 \mu\text{L g}^{-1}$, $LC_{50} = 41.92 \mu\text{L L}^{-1}$ air, respectively). Non-significant difference was found between (R) and (S)-Limonene in contact and fumigant tests. However, (R)-Limonene in ingestion test exhibited higher toxicity against *S. zeamais* than the (S)-Limonene. Deltamethrin was much more toxic in contact and ingestion bioassays than *Citrus* oils and two enantiomeric forms of limonene. Repellent bioassay also revealed that *C. reticulata* oil was more repellent than *C. aurantifolia*. In the repellency test, *S. zeamais* adult was more susceptible to (S)-Limonene than the (R)-Limonene at a lower concentration. The results of this study suggested that, in addition to behavior effect on *S. zeamais*, the *Citrus* oils affected by different ways, i.e., via the cuticle, digestive and respiratory systems, and the two enantiomeric forms of limonene showed different insecticidal properties.