

RUTA CHALEPENSIS L.: A POTENTIAL NEMATICIDE FROM SARDINIAN FOLK MEDICINE (ITALY)

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The interest in the development of non-toxic crop protection chemicals of botanical origin is in continuous growing. Research studies are focused on the isolation and identification of plant defensive chemicals. We report on the use of *Ruta chalepensis* L. as a potential nematicide against the root knot nematodes *Meloidogyne incognita* and *M. javanica*.

Ruta chalepensis L. (Rutaceae) is a strongly aromatic plant that lives in coastal areas of the Mediterranean regions. In Italy we mainly find it in the central and southern islands. This plant grows particularly in warm areas (up to 600-700 m). In Sardinia it is common in coastal areas on cliffs and dry meadows. It is known since antiquity as medicinal and magical plant and it is still used in folk medicine as a remedy in the resolution of certain disorders: in the digestive system, respiratory system, circulatory system, urogenital system and the nervous system (Atzei, 2009).

The data resulting from ethnobotanical investigations conducted in the past and recently reconfirmed by several experts reveal a traditional use as a pesticide plant. Already in the '700 century, because of its strong, acrid smell, fresh branches were placed in the areas infested with fleas (Manca Dell'Arca, D.A., 1780), bugs (Camarda, 1984) and to keep away snakes (Manca Dell'Arca, D.A., 1780).

Starting from the above information, in their work the authors wanted to test the nematicidal activity of the plant essential oil obtained by hydrodistillation Clevenger (Winzer) and its main constituent, identified by GC-MS and isolated by bio-guided fractionation.

The essential oil of *R. chalepensis* was tested by bioassays paralysis in the second early stage of the two species of nematodes, *M. incognita* and *M. javanica*, both tomato roots pests. As reference substance, acting as nematicide, was used nematorina. At the end of the study it was observed a clear dose-response relationship and a significant paralysis after one day of exposure on both early stages of the nematodes. Among the compounds isolated from essential ketone, 2-undecanone was the most active with EC50 values = 20 and 22 ppm for *M. incognita* and *M. javanica*, respectively. It follows that *M. incognita* is more sensitive than *M. javanica* to 2-undecanone.

Current studies are underway to determine the mechanism of action and toxicity of the active components of the essential oil of *Ruta chalepensis* in order to assess their potential use as a pesticide in agriculture.

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