

Nematicidal activity of naphthoquinones – nematode generation of reactive oxygen species

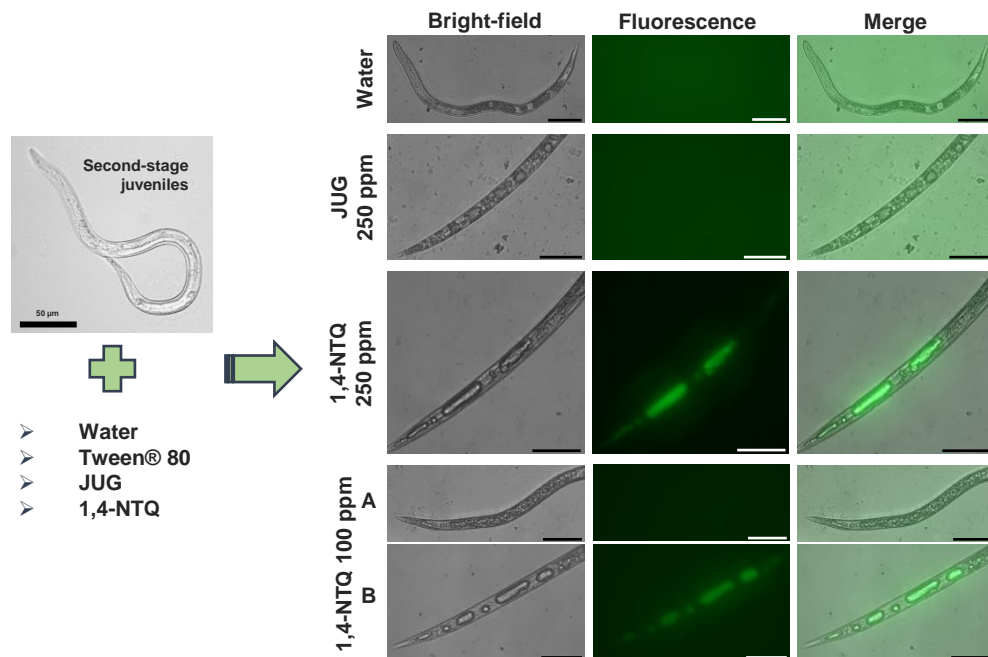
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Naphthoquinones (NTQ) are naturally occurring compounds in several families of plants. Among NTQ, juglone (JUG) and 1,4-naphthoquinone (1,4-NTQ) were shown to have nematicidal activity against root-knot nematodes (RKN, *Meloidogyne* spp.). This study aimed to infer on JUG and 1,4-NTQ mode of action through the assessment of reactive oxygen species (ROS) generation by observation of *M. luci* second-stage juveniles (J2).



- No *M. luci* J2 treated with water or Tween® 80 generated ROS fluorescence
- JUG - J2 did not exhibit ROS fluorescence but small and multiple vacuoles associated to mortality was detected
- 1,4-NTQ – J2 showed fluorescence as evidence of ROS and multiple giant vacuoles

Although these bioactive compounds are promising alternatives to the use of synthetic nematicides to control RKN, their mode of action may be different and should be further investigated

ROS production in *M. luci* J2 after exposure to JUG 250 ppm and 1,4-NTQ at 100 and 250 ppm for three days. At 1,4-NTQ 100 ppm some nematodes remained mobile (A) while others were death (B). Scale bars = 50 µm