Nematicidal effects of fungal metabolites on *Meloidogyne incognita*

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Plant-parasitic nematodes are the cause of annual monetary losses of more than 100 billion US$. In order to sustainably substitute toxicologically and environmentally harmful chemical nematicides, novel and recurrent secondary metabolites of fungal origin have currently attracted much attention.

In this study 12 fungal metabolites of various origin and composition have been tested *in vitro* on second-stage juveniles of the root-knot nematode *Meloidogyne incognita*. The metabolites were dissolved in water or 2% DMSO. Water and 2% DMSO were used as negative controls and the nematicide Nemathorin® (active ingredient fosthiazate) as positive control. After 24 hours of incubation, the percentage of inactive juveniles was recorded. Juveniles were then washed in tap water and exposed to fresh water for another 24 hours. Finally, juvenile activity was again determined. One-Way-ANOVA followed by Tukey post-hoc test was conducted to measure significant differences between various treatments before and after exposure to fresh water. The results of the experiment showed that *4-methyl-3-penten-1-ol* caused 96.6% mortality, followed by *linoleic acid* with 92.8% mortality. Those two compounds exhibited the strongest nematicidal action of all metabolites tested. Notably, they were significantly more effective than the positive control *fosthiazate* with 85.0% mortality. Among four samples extracted from *Arthrobotrys oligospora*, "*ME CMD with C. e.*", showed 36.5% mortality rate. The lipoaminopeptide leucinostatin from *Purpureocillium lilacinum* displayed up to 30.8% mortality on *M. incognita*.

According to our results, the fungal metabolite *4-methyl-3-penten-1-ol* is currently the most promising compound for biocontrol of the root-knot nematode *M. incognita*. Consequently, this secondary metabolite will be considered for further investigations.