Phytol may be promising for eco-friendly agrochemicals to control root-knot nematodes

22 March 2021

"We noticed that plant leaves discolored yellow or pale green when their roots were parasitized by RKNs and confirmed a decrease in chlorophyll content in such leaves. We hypothesized that chloroplast-related compounds would accumulate in RKN-parasitized roots and induce the host defense against RKNs. We analyzed root metabolites and found accumulation of phytol, a constituent of chlorophyll. When phytol was applied to plant roots, RKN invasion of the roots was inhibited. This inhibition was not due to the direct nematicidal activity of phytol, since this compound did not kill RKNs," added Seo.

Even though phytol has been known for several years as a constituent of chlorophyll and is a ubiquitous compound present in almost all photosynthetic organisms, its role as a plant defense-signaling molecule remained unexplored. "Phytol may be a promising material for eco-friendly agrochemicals for the control of RKNs. We are currently investigating its effects on not only other plant parasitic nematodes but also other pathogenic microorganisms." For more information about this study, read "Phytol, a Constituent of Chlorophyll, Induces Root-Knot Nematode Resistance in Arabidopsis via the Ethylene Signaling Pathway" in the MPMI journal.


Provided by American Phytopathological Society

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