

PLANT PARASITIC NEMATODES DETECT ENVIRONMENTAL SIGNALS PRESENT IN THE RHIZOSPHERE USING THEIR CHEMOSENSORY ORGANS.

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Host recognition processes in the rhizosphere are based on complex exchanges that evolve around plant roots and the molecules present in root exudates play a very important role in these interactions. Nematodes can rapidly change their surface composition in response to environmental signals, which may enable animal parasitic nematodes to escape host immune responses and free-living nematodes to escape pathogenic infections^{7,8}. Our work has shown that *in vitro*, plant signals present in root exudates, trigger a rapid alteration of the surface cuticle of sedentary plant parasitic nematodes and that the same changes were also induced by phytohormones, such as auxin and cytokinins to *Meloidogyne incognita* but not to *Globodera rostochiensis*^{1,2,3,4,6}. Root-knot nematodes invade a large number of plants and not surprisingly, sense and respond to general plant regulators whilst the cuticle of the infective stage of potato cyst nematodes which invades mainly *Solanaceous* plants was not affected in the same way by phytohormones. Plant signals present in root exudates also trigger behavioural responses in the free-living nematode *Caenorhabditis elegans* and our work shows that this nematode responds to indole-acetic acid (IAA)^{4,5}, this ability to respond to IAA from plant or bacteria origin could benefit food location. In addition, auxin gradient formed in the roots might function as a **short distance orientation marker** for *M. incognita* to navigate on the root surface and/or inside the root tissue. RKN invade roots at the zone of elongation where the highest levels of IAA influxes have been determined. We have shown IAA binds to the chemosensory organs of *M. incognita* and we suggest that stimulation of chemosensory receptors by environmental signals may lead to changes in the nematode cuticle and behaviour. Protein sequence using Q-TOF Mass Spectrometry, was obtained from *C. elegans* and *M. incognita* molecules isolated from an IAA affinity chromatography. No reactivity of this protein was obtained with antibodies raised to plant auxin-binding proteins. Further work will concentrate on the functional analysis and localisation of expression of the nematode genes identified as potentially involved in auxin sensing.

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