**The role of *Pratylenchus penetrans* transthyretin-like protein in parasitism**

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Worldwide crop losses due to plant-parasitic nematodes have been estimated at $118 billion annually, with root lesion nematodes (RLN), *Pratylenchus spp*., ranking third in terms of economic losses. The economic impact of *Pratylenchus* *spp.* is due to their wide host range, comprising more than 400 plant species, including agronomically important crops, ornamentals/floral plants, and fruit trees. Surveys conducted in Portugal revealed the presence of different species of *Pratylenchus* associated with important crops, being *Pratylenchus penetrans* the most abundant species and reported for the first time associated with potato in the country. Transcriptomic studies from *P. penetrans* revealed several families of genes that are abundantly expressed during plant infection. Transthyretin-like proteins (TTL) belong to a widely conserved family present only in the Phylum Nematoda. Although several TTLs (protein domain PF01060) have been identified for both animal and plant-parasitic nematodes most of their function(s) remains unclear. In *Pratylenchus penetrans*, an i*n silico* analysis identified twenty-four predicted TTLs members for this species, all of them containing a predicted signal peptide. *In situ* hybridization assays demonstrated that four of these members are specifically localized in the nematode esophageal gland cells (parasitism specialized cells), suggesting their potential involvement during parasitism. The differential localization of TTL suggests different mode of action within the plant cells. Oxidative stress assays demonstrated that some of these gland cell expressed TTLs have a strong upregulation when nematodes are exposed to an external oxidative agent (hydrogen peroxide) stimulus compared to a secreted nematode catalase – an enzyme that directly degrades hydrogen peroxide. The results suggest that some of these TTLs might have a potential role during ROS scavenging activity. The knockdown of one of these enzymes by RNAi soaking assays showed a significant reduction of the number of nematodes, revealing their importance in plant-nematode interaction. Overall TTLs from this nematode suggests an important role on protecting or modulating the reactive oxygen species (ROS) activity of the host plant during parasitism. These candidate genes could be a good target to further explore news solutions for the control of the nematode.

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