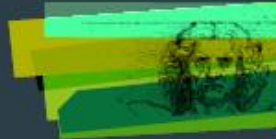


LE STUDIUM
CONFERENCES
VIRTUAL MEETING | 2021



28th June - 2nd July 2021

**2021 International Congress
on Invertebrate Pathology and
Microbial Control &
53rd Annual Meeting of the Society
for Invertebrate Pathology**

LOCATION

VIRTUAL MEETING

CONVENORS

**Dr Cristina Del Rincon
Castro**

LE STUDIUM / MARIE SKŁODOWSKA-CURIE
RESEARCH FELLOW

FROM University of Guanajuato - Mexico

IN RESIDENCE AT Insect Biology Research
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Javad Karimi is an associate professor of insect pathology in the Ferdowsi University of Mashhad (FUM) (2008-now) which graduated from the University of Tehran (2007). His academic teaching and research interest focuses on insect pathogens as biocontrol agents with special reference to entomopathogenic nematodes (EPNs) (including their symbiotic bacteria) and insect parasitic nematodes

Biological and taxonomic characterization of a superior infective isolate of *Acrobeloides* spp.

Insect-associated nematodes are important neglected biocontrol agents, and accordingly, isolation and identification of the native field-collected nematodes are required to be used as a biological tool for controlling endemic insect pests. During a survey of entomopathogenic nematodes (EPNs) in various agricultural fields in Kerman region, a local insect-killing nematode was recovered from soil samples using the Galleria bait method. Morphological studies with light microscopy and scanning electron microscopy, as well as molecular analyses using 18S, ITS and 28S region of ribosomal DNA identified this isolates as *Acrobeloides* spp. The invasion, reproduction and foraging behavior of the native field-collected free living nematode were studied on two insect species. Despite the free living and parasitic behavior of this nematode, it causes infection in some insect pest's larvae and successfully recycles. Here we will discuss about challenges for clarifying *Acrobeloides* and other new emerging genus of insect associated rhabditids like *Oscheius* as insect pathogen. Comparison among real entomopathogen group and the complicated rhabditid genera from *Acrobeloides* and *Oscheius* in term of their potential role in biocontrol is another aspect of this paper.



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The cost of fighting for surviving in a complex world: entomopathogenic nematodes as scavengers

Entomopathogenic nematodes (EPNs) in the traditional families Steinernematidae and Heterorhabditidae are relevant and well-studied agents for the biological control of soil crop insect pests. Theoretically, their infective juvenile (IJ) stages existing in soils can act as entomopathogens colonizing live hosts or as facultative scavengers reproducing within dead hosts. Whether both paths are equally successful for EPNs is still poorly understood. Several studies proved that EPNs complete their life-cycle within freeze-killed hosts whose reproductive success depends on the host species, the number of IJs, and the presence of other scavengers, including free-living nematode (FLN) species in the genera *Oscheius*, *Acrobeloides*, and *Pristionchus*. In any case, the EPN offspring is commonly lower for IJs that reproduced as scavengers. Laboratory experiments also showed that high competitive pressures of FLNs reduced the virulence of IJs that emerged in low numbers from freeze-killed larvae. Alike, mix EPN and FLN progenies derived from infected larvae in soil baits often compromised EPN reproductive success. Some FLNs can even appear in nematode progenies of Koch's postulates tests. Whether this fact is due to FLNs behaving as entomopathogens or to the unnoticed presence of steinernematids or heterorhabditids are possibilities to consider for FLN species not included in the traditional EPN families. Further studies involving different soil-dwelling organisms, including the EPN symbiont bacteria, will be required to unravel the complex interactions occurring in soils and the diverse roles that each of them could play to increase their chances of success.



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