BioMed Research International

Special Issue on
Chemical Ecology of Parasitic Hymenoptera

CALL FOR PAPERS

In the past one hundred years, the evolutionary chemical ecology of arthropods has been deeply investigated by a wide range of scientists, including chemists, ecologists, neurobiologists, entomologists, and behavioural and evolutionary biologists. Among insects, a substantial number of studies focus on the ecology of parasitic Hymenoptera. Most of these wasps have evolved to consume insect herbivores which represent a major threat for plants. Parasitoids are therefore considered key organisms in both natural and agricultural systems, for their role in ecosystem services and biological pest control. These fascinating organisms rely on a range of communication channels during their life, including visual, auditory, and olfactory channels.

A full understanding of the chemical ecology and evolution of Hymenoptera parasitoids can serve to further develop biological control programs. At an operational level, behavioural knowledge would help to improve mass-rearing techniques, evaluate release rates in a given habitat, and predict parasitoid's effectiveness against a variety of hosts. Although extensive research has been carried out on these topics in recent years, there are still significant gaps in our knowledge of the chemical ecology of many parasitic wasps. On this basis, for the special issue, we invite the submission of original research papers and reviews dealing with all facets of chemical ecology of parasitic wasps. We would like to encourage all contributors to focus on current and potential implications for biological control and mass-rearing techniques.

Potential topics include, but are not limited to:

- Antimicrobial properties of chemicals produced by parasitic Hymenoptera larvae to sanitise their hosts
- Chemically mediated mechanisms guiding intrasexual aggression, courtship, and mate choice; identification of sex pheromones and their potential usefulness in the field is of peculiar interest
- Olfactory cues involved in host-seeking behaviour, with special references to foraging kairomones (e.g., host-induced plant volatiles)
- Benefits and risks arising from the application of foraging kairomones as field lures in integrated pest management, to monitor parasitoid population density and to re-establish wasp-host relationships that become decoupled in disturbed agricultural habitats
- Associative learning for mate- and host-related cues, as well as for enemy-avoidance kairomones, since these can potentially be used to provide experience to lab-reared parasitoids, overcoming critical steps in mass rearing and improving beneficial performance in the field
- How parasitic Hymenoptera integrate multiple cues in their foraging decisions
- Chemically mediated foraging behaviour of hyperparasitoids, that is, secondary parasitoids that develop in/on the body of primary parasitoids and ultimately kill them, which decimate parasitoid numbers disrupting herbivore regulation. Hyperparasitoids could represent an important constrain for the use of FK as field lures to attract parasitoids to agricultural fields
- Insights on evolution of olfactory signals in parasitoid-host guilds and prediction of host-based differentiation

Authors can submit their manuscripts via the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/bmri/parasitology/cep/.

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Manuscript Due
Friday, 16 October 2015

First Round of Reviews
Friday, 8 January 2016

Publication Date
Friday, 4 March 2016