

## From insect pheromone synthesis to preparations

© Gumer Yu. Ishmuratov,\* Nailya M. Ishmuratova,

Marina P. Yakovleva,<sup>+</sup> Valentina A. Vydrina, and Genrich A. Tolstikov

Ufa Institute of Chemistry of the Russian Academy of Sciences. Pr. Oktyabrya, 71. Ufa, 450054,  
Bashkortostan. Russia. Phone: +7 (347) 235-58-01. Fax: +7 (347) 235-60-66. E-mail: [insect@anrb.ru](mailto:insect@anrb.ru)

\*Supervising author; <sup>+</sup>Corresponding author

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### Abstract

The paper summarizes the results obtained by the Laboratory of Insects' Bioregulators (Ufa Institute of Chemistry of the Russian Academy of Sciences) in the streamlined synthesis of honey bee and pest insect pheromones and development of preparations on their basis for beekeeping and pest population control.

Progress has been achieved in a promising research area, namely, a streamlined synthesis of low-molecular-weight insect bioregulators, including the development of high-tech procedures for obtaining a large group of universal acyclic-type block-syntones and designing original and efficient schemes on their basis to synthesize acetogenin, isoprenoid and macrolide pheromones of more than 60 species of agricultural and forest insect pests.

Using the theory of insect communication by pheromones, a promising research area has been formed and developed to create beekeeping medications on the basis of synthesized honey bee metabolites [multifunctional pheromone of the honey bee – 9-oxo-2*E*-decenoic acid (9-ODA) – and the active component of royal jelly – 10-hydroxi-2*E*-decenoic acid (10-HDA)], including the development of efficient methods for their synthesis and investigations into pharmacological activity and application techniques.