[P1.25]

New approaches in investigation of insect predation in the case of invasive species

K.A. Kitaev*, M.B. Udalov, G.V. Benkovskaya
Institute of Biochemistry and Genetics of Russian Academy of Science, Russia

Predation in the insects can be detected by PCR analysis with species-specific primers even through 26 hours. Quantitative predation rates may be evaluated by this method. It is very important in case of invasive pest species.

We are researching the adaptation processes in predators proceeding to feed by Colorado potato beetle (*Leptinotarsa decemlineata* Say) in the South Urals. This species is invasive. It has appeared in South Urals 34 years ago. Complex of predators living in potato field is formed since its arrival.

Predatory insects were caught in antifreeze (water solution of ethylenglicol) and were preserved for a week. We extracted DNA from gut and its content; also we extracted DNA from other tissues (muscles, fat body). These samples of DNA were used for PCR with specific primers designed from COI of *L. decemlineata*. Estimating of this analyses results make it possible to determine the number of predators eating *L. decemlineata*. Then we made RAPD-PCR with DNA samples from other tissues. Samples were divided into groups: predators which had or not eaten the Colorado potato beetle larvae. The third group of predators was collected from other field. We compared results of RAPD analysis between these groups. We can use the comparative data to determine the dynamics of gene pool changes in population of predators.

Also we analyzed excrements of predators. This method makes it possible to detect predation through 20-30 hours after chasing and to keep predators alive for following experiments. We fed two groups of predators (preliminary fed by Colorado potato beetle and not fed) only with Colorado potato beetle larvae or eggs. Data of mortality in each group allow estimating approximately predator's adaptation to feed by Colorado potato beetle.

New approaches make new solutions problem of invasion in ecosystems.

Investigations funded by RFBR №09-04-00391-a and №11-04-01886-a.

Keywords: predator prey interactions, gut content analysis, PCR, gene flow