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Muhammed TATAR[1], Aslihan Esra BILDIRICI[1], Fatih OLMEZ[1], Zemran MUSTAFA[1] and Göksel TOZLU[2]

[1] Faculty of Agricultural Sciences and Technology, Sivas University of Science and Technology, Sivas-TURKEY
[2]Faculty of Agriculture, Atatürk Universty, Erzurum-TURKEY

mtatar@sivas.edu.tr

ABSTRACT

Insects, belong in the Arthropoda phylum, are the most numerous animal group in the world, with more than 1.000.000 species. Insects ensure the sustainability of life on earth by pollinating plants, improving soil texture by decomposing organic materials and providing nutrients to humans. In this study, starting from the necessity of performing DNA isolation for sequence analysis, DNA fingerprinting, gene-genome analysis, it is aimed to compare three different isolation methods in terms of time and quality for obtaining genetic material from museum samples (old) and new samples of insects. Isolated DNA samples can be used in order to carry out studies such as species identification, taxonomic relations, comparison of insect-plant and –microfauna relations, revealing genomic, population and genetic diversity, bio-geography determination, combating agricultural pets etc. The samples belong to same insect species, collected at most 9-12 months ago considered as new speciemen and old speciemen of 7-28 age constitute the material of study. Three DNA isolation protocols: Phenol-Chlorofom, Salting Out and DArT, consitute the methods of the study. Within the scope of this study, when 1% DNA quality gel images and $A_{260/280}$ and $A_{260/230}$ values were considered together, it was observed that the best results in terms of quality were obtained with phenol-chloroform method in newly collected samples. When $A_{260/280}$ values are examined, it can be deduced that DArT protocol is the most appropriate protocol in terms of purity of both old and new insect samples. When evaluated in terms of time, it was observed that the Phenol-chloroform method was the shortest protocol lasting for about 1 h and 45 min. Accordingly, it was concluded that the Phenol-chloroform method is the most appropriate protocol for both old and new samples. The obtained DNAs can be used for next experimental stages or stored as stock material at -20 ºC for further studies. Determining appropriate protocol to obtain high quality isolated DNA materials is important for the continution of studies. Our study is also important in terms of identifying species and determining systematic status of species, especially by examining the taxonomic relationships. Using molecular taxonomy in addition to classical taxonomy allows identification of insects on species basis. In addition, useful information is presented for researchers who will study insect molecular biology in following years.

Key words: Insect, Coleoptera, Cerambycidae, DNA isolation, Genetic material.