Abstract

Heat stress is one of the most important environmental stressors challenging poultry production Worldwide, especially in warm regions such as Sistan Province of Iran. Heat stress increases the production of free radicals in the chicken's body. Glutathione peroxidase plays important roles as cellular antioxidants in heat stress. In this study, we conducted an analysis of the evolutionary and phylogenetic of GPX1 in Ross and Khazak populations. Boold samples were collected from 20 birds in randomly from two stock of Khazak and Ross population (10 Ross and 10 Khazak birds). DNA is extracted from whole blood. PCR amplification of 800 bp of GPX1 was performed using one pairs of special primers. Then, PCR product sent for DNA sequencing. Sequence alignment of the GPX1 fragment revealed a total of 9 haplotypes and 13 variable sites. Out of 13 polymorphic sites, 5 were singletons and 8 were parsimony-informative were observed. Dendrogram of phylogenetic showing genetic similarity between the two populations studied (Khazak and Ross population), but probably diversity within populations indicate the ability to improve, genetic changes and increasing of resistance to environmental stresses. The results of genetic distance and polymorphic site of GPX1 in different species approved phylogenetic tree depicting. Study of positive- selection process has been shown that selection and evolution is playing a major role in understanding the biological function of this gene.

Keywords: Evolution, Glutathione peroxidase, Homologous, Phylogenetic.

University of Zabol
Graduate School
Faculty of Agriculture
Department of Animal Science
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Evolutionary and phylogenetic study of *Glutathione peroxidase* gene in Khazak and Ross strain

Supervisor:

Dr. GR. Dashab

Dr. M. Vafaye Valleh

Advisor:

N. Moradi Kor

By:

R. Najmaldini

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