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MOLECULAR GENETIC VARIABILITIES FOR LITTER SIZE TRAIT AMONG LOCAL GOAT BREEDS IN EGYPT

By

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B.Sc. in Animal Production, Upper Nile University, South Sudan (2005)
M.Sc. in Tropical Animal Production, University of Khartoum, Sudan (2012)

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ABSTRACT

Emmanuel Chol Kodit Amalith: Molecular Genetic Variabilities for Litter Size Trait among Local Goat Breeds in Egypt. Unpublished Ph.D. Thesis, Department of Animal Production, Faculty of Agriculture, Ain Shams University, 2021.

Three main local Egyptian goat breeds i.e. Baladi, Zaraibi (famous for their high litter size) and Barki (known for its low litter size) were used to identify and differentiate the main three Egyptian local goat breeds and to assess genetic variation among and within these goat breeds related to litter size trait, considered as one of the most important economic traits, based on information at the DNA level using both the Cytochrome oxidase subunit I (COI) gene and the Fluorescently Amplified Fragment Length Polymorphism (F-AFLP) techniques. Blast (Basic Local Alignment Search Tool) results confirmed samples to be *Capra hircus* (100%) with no variation among the studied breeds. F-AFLP analysis of triplicates per breed produced 164 polymorphic loci. At the same time fixed and private bands varied among the three breeds; 47, 17 and 14 bands and 9, 19 and 27 bands for Baladi, Zaraibi and Barki, respectively. Analysis of Molecular Variance (AMOVA) showed 3.8% and 96.1% genetic variance among and within breeds, respectively. Population re-allocation showed that all samples of Baladi breed are outliers, Zaraibi breed one outlier and two hybrids and in Barki breed one hybrid, one outlier and one allocates itself. Private bands in excel filter (using virtual inspection in excel) showed fixed bands of 213bp molecular weight at locus 35 in both Baladi and Zaraibi breeds. These bands considered as genetic marker for prolific animals.

Keywords: COI sequencing, F-AFLP technique, Egyptian goats, Molecular variance and litter size.

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