

Polymorphisms in the Prolactin Gene (C576A) and Its Effect on Milk Production Traits in Crossbred Anglo-Nubian Dairy Goats

Authors : Carlo Stephen O. Moneva, Sharon Rose M. Tabugo

Abstract : The present study aims to assess polymorphism in the prolactin (C576A) gene and determine the influence of different prolactin (PRL) genotypes to milk yield performance in crossbred Anglo-Nubian dairy goats raised from Awang, Opol, Misamis Oriental and Talay, Dumaguete City, Negros Oriental. Genomic DNA was extracted from hair follicles and Polymerase Chain Reaction - Restriction Fragment Length Polymorphism (PCR-RFLP) was performed for the genotyping of the C576A polymorphism located in exon 5 of goats' prolactin gene using Eco241 restriction enzyme. Genotypic and allelic frequencies of 0.56 for AA, 0.44 for AB, 0.78 for A, and 0.22 for B were recorded. Observed heterozygosity values were higher than the expected heterozygosity. All populations followed the Hardy-Weinberg principle at $p>0.05$, except for dairy goats from Farm A located in Opol, Misamis Oriental. A two-way factorial (2 x 4) in a Randomized Complete Block Design was used to be able to evaluate the relationship between genotypes and milk yield performance. PRL genotypes and parity were used as main factors and farm as the blocking factor. AB genotype goats produced significantly higher average daily milk yield and total milk production than AA genotype ($p<0.05$), an indication that the polymorphism in the caprine PRL (C576A) gene influenced milk yield performance in the population of crossbred Anglo-Nubian goats from Opol, Misamis Oriental and Dumaguete City, Negros Oriental. However, these results have to be validated in other dairy goat breeds.

Keywords : polymorphism, prolactin, milk yield, Anglo-Nubian, PCR-RFLP

Conference Title : ICADS 2023 : International Conference on Animal and Dairy Sciences

Conference Location : Mandalay, Myanmar

Conference Dates : January 23-24, 2023