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## Analysis of selected milk traits in Palestine cattle in relative to morphology and genetic polymorphism

Zyiad Mushref Abu Khaizaran<sup>1,2</sup><sup>1</sup>Bethlehem University, Palestine<sup>2</sup>Palestine Polytechnic University, Palestine

Modern dairy cattle breeding strategies depend on linkage analysis and quantitative trait loci (QTL) of genes involved in milk yield and composition. This is because of their biological desired quantitative traits that play key roles in milk production. In this study, three genes directly related to milk production: Prolactin (*PRL*), bovine kappa-casein (*K-CN*) and the pituitary-specific transcription factor (*PIT-1*) were analyzed in 144 cows. The aim of this study was to identify polymorphisms in the Holstein-Friesian cattle breed in Palestine in relation to the genetic markers and allelic variants of the three genes. Collection of samples depended on an experimental design that was completely randomized (CRD) and blood samples were collected from different cities across the West Bank, Palestine. The genotypes were determined through the Polymerase Chain Reaction-Restriction Fragments Length Polymorphism (PCR-RFLP) technique. The amplified fragments of *PRL* (294-bp), *K-CN* (530-bp) and *PIT-1* (451-bp) were digested with *RsaI*, *HindIII* and *Hinfl*, respectively. Statistical analysis found that the prolactin allelic substitution (AG, GG) played a role in milk production with a p-value of 0.00643 and  $\alpha$  (0.001\*\*), the AG allele of *PRL* being more favorable for milk production as compared to the GG allele. Genetic variants of the bovine *K-CN* gene played a role in milk production with a p-value of 0.04071 and  $\alpha$  (0.01\*), the AA allele possessing more positive effect than the BB and AB alleles. Similarly, the allelic substitution of the *PIT-1* gene affected milk production with a p-value of 2.274e-05 and  $\alpha$  (0\*\*\*), the AA allele exercising a more positive effect followed by the AB and BB alleles, respectively. Among the three studied breeds (Friesian, hybrid and local), results show that the Friesian breed possesses higher overall milk production in Palestine as compared to the other two breeds.

### Biography

Zyiad Mushref Abu Khaizaran is a PhD student in the Department of Biology and Biotechnology from Bethlehem University and Palestine Polytechnic University, Palestine. He has completed his Master of Biotechnology from Palestine Polytechnic University - Palestine and BSc of General Science from Al-Quds Open University, Ramallah, Palestine.

[zyiad\\_abukhaizaran@yahoo.com](mailto:zyiad_abukhaizaran@yahoo.com)

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