

## Association of MSTN gene polymorphism with body dimension and physiological performance in original Arabian horses

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**ABSTRACT:**

This study was under taken at Al- Zawra Park in downtown Baghdad on 50 of the original horses (*Equus caballus*) according to the Mayoralty of Baghdad, as well as the Laboratory of the Scientific Progress of Biotechnology and Molecular Genetics Analysis for the period from 1<sup>st</sup> July 2017 to 30<sup>th</sup> December 2017. This study was conducted in order to determine the genotype of myostatin (MSTN) and its relationship with performance (physiological, body dimensions and some of the blood traits), as well as the study of the distribution of their genotype in the sample and the alleles frequency obtained.

The percentages of the distribution of CC, CT and TT were significantly ( $P<0.01$ ) different for MSTN in the studied sample as their percentages 88.0, 8.0 and 4.0% sequentially, with a recurrence of 0.84 and 0.16% respectively for C and T respectively. There was significant differences ( $P<0.05$ ) in the breathing depth and the number of breathing times before exercise according to the Genotype of the myostatin gene (MSTN). After morning exercise, the effect was significant ( $P<0.05$ ) and highly significant in the number of times of breathing.

The length of the body, the height of the back and shoulder length were significantly affected ( $P<0.05$ ) by the genotype difference of the MSTN gene, while the height of the front and height of the top was not significant for the horses with the genotype CC and CT, and the heart Girth was high significantly affected ( $P<0.01$ ) with the genotype difference of MSTN gene. Also significant differences ( $P<0.01$ ) between MSTN genes in the number of red blood cells and the level of hemoglobin, total protein, glucose and cholesterol were found. We can conclude by the study of genotypes of MSTN that could be used to develop horse genetic improvement strategies. The application of the study to a larger sample and multiple sites, and the extraction of overlapping structures between the two genotypes would provide more accurate results for the implementation of the strategy of exclusion, substitution and identification of the best method for horses management.

**Keywords:**

Horses-MSTN gene-body dimension and physiological performance.