

Responses of serum biochemical parameters, electrolytes and heart rate in an 80km endurance race

ABSTRACT

Changes in serum biochemical parameters, electrolytes and heart rate have a deleterious effect on the performances of endurance horses especially during a strenuous race. Therefore, the aim of this study was to investigate the changes of gamma glutamyltransferase (GGT), glucose, lactate, potassium and heart rate after an 80km endurance race. Forty eight Arabian endurance horses were physically examined and blood samples were collected post-race. After physical examination, the good (n = 9) and poor (n = 9) performance endurance horses were identified. T-test and pairwise correlations were used for the analysis. The mean values of GGT and lactate were significantly higher between the good and poor performance endurance horses ($P < 0.016$) respectively. The mean blood glucose concentration and heart rate between the good and poor performance endurance horses were significantly lower ($P < 0.000$) and ($P < 0.002$) respectively, while the mean blood potassium concentration between the good and poor performance endurance horses was significantly higher ($P < 0.000$). There were no significant correlation between GGT and lactate ($r = 0.247$; $P < 0.09$), between GGT and potassium ($r = 0.275$; $P < 0.058$) and between GGT and heart rate ($r = 0.070$; $P < 0.638$) while, significantly weak negative correlation was found between GGT and glucose ($r = - 0.393$; $P < 0.022$). In conclusion, poor performance could be associated with changes in heart rate, glucose, lactate and potassium concentrations. Heart rate, blood lactate and potassium concentrations of endurance horses were not significantly associated with biomarkers of oxidative stress index. Therefore, further studies are required to determine if GGT could be used to evaluate performance in endurance horses during training and endurance events.

Keyword: Endurance horses; Performance; Electrolytes; Serum biochemical; Oxidative stress; 80 km