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Markers for Predicting Overweight or Obesity of Riding Egyptian Broodmares Mares

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Abstract : For estimating markers of overweight or obesity of brood mares used for riding and training, 17 mares of different body conditions were subjected to blood sampling and ultrasound examination to measure rump fat thickness and monitor ovulation for six consecutive weeks. Also length (L), heart girth (G) and withers height (H) were measured to estimate body weight (BW), body fat %, body fat mass (BFM) and body mass index (BMI). Mares were classified into three groups according to both body condition score (BCS) and rump back fat (BF). Overweight mares (O) were having BCS > 7 and BF thickness >7mm, moderate body condition (M) mares were having BCS >3and ≤7and BF <3and <7mm, and emaciated mares (E) were having BCS ≤3 and BF ≤3mm. glucose, triglycerides, nitric oxide, ovarian, thyroid, insulin, insulin like growth factor-I (IGF-1), and leptin hormones were measured. Results revealed that BCS, G, L, L*G*H, BW, BF, fat %, BFM were significantly (P<0.0001) decreasing linearly from O to E. T4 concentrations of E were significantly high (P=0.04) compared to M and O but T3 concentrations tended to decrease in E (P>0.05). Insulin and IGF-1 concentrations tended to be high in O (P>0.05) and decrease with the decrease of body condition. M had (P=0.007) the highest leptin, but E mares had the lowest P4 concentrations (P=0.01). Concentrations of glucose and NO decreased with the decrease of BCS and BF but triglycerides of O were insignificantly high. In conclusion, exercise could prevent the development of metabolic syndrome in horses and back fat and morphometric measurements were the easiest and simple assessment of overweight and deviation to obesity.

Keywords : body condition score, insulin, leptin, mares, rump fat
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