

28. STUDIES ON THE EFFECTS OF PLANE OF NUTRITION AND DRAUGHT STRESS ON THE REPRODUCTIVE PERFORMANCE OF FEMALE DONKEYS

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Two Experiments were conducted to investigate the effects of plane of nutrition and draught stress on the reproductive performance of female donkeys. In Experiment 1, effects of plane of nutrition on energy status, body condition and reproductive cyclicity were assessed on a total of 11 resting donkeys. The donkeys were divided in two groups (G1 = 5 animals; G2 = 6 donkeys) for a period of 179 days. Donkeys in G1 were not given any feed supplement but were grazed freely in a fenced paddock containing low quality unimproved pastures from 0800 to 1600h. Donkeys in the second group (G2) were grazed in the same manner but in addition they were offered a supplement (Cotton Seed Cake and Wheat Feed) at a rate of 1.8 kg per day per animal. The supplement contained 15 MJ DE/kg DM and 17.7% Crude protein. During this experiment, change in body weight was recorded once every two weeks. Reproductive cyclicity (i.e. oestrous cycle length and duration of oestrus) were recorded over the experimental period. Haematological (packed cell volume and haemoglobin), biochemical (Glucose, Total protein and Non esterified fatty acids) were assessed in blood samples collected three times weekly. In addition plasma hormonal levels of Progesterone and cortisol were also determined. In Experiment II (draught study) the same donkeys used in Experiment I were made to pull loaded carts weighing about three times their body weight for a period of 3 h on days 82 - 84 and 113 - 114 of the Experiment I. Blood samples were collected one hour before work and at 15 min interval during a 3 h of work. The plasma obtained was used to assess biochemical and hormonal changes associated with draught stress. Donkeys in both groups showed a steady increase in body weight with those in G2 registering significantly ($P > 0.05$) higher final weight (146.5 vs 141.0). Biochemical (i.e, Glucose, TPP and NEFA), haematological (PCV and Hb) and reproductive (oestrous cycle length and duration of

oestrus) parameters were not influenced by plane of nutrition during Experiment I. Plasma Glucose concentration fell from 4.04 ± 0.2 mmol/l to 3.07 ± 0.3 in the supplemented donkeys and from 4.06 ± 0.6 mmol/l to 2.8 ± 0.3 mmol/l in non supplemented donkeys after three hours of work. The level of NEFA increased from 0.34 ± 0.02 mmol/l to 0.52 ± 0.06 mmol/l in non supplemented group (G1) and from 0.29 ± 0.02 mmol/l to 0.39 ± 0.03 mmol/l in the supplemented group (G2) after 3 h of work; the differences between groups being highly significant ($P < 0.001$). The TPP concentration of G2 donkeys remained the same throughout the working period whereas that of G1 donkeys increased significantly ($P < 0.05$) within 2 h of work and thereafter remained significantly higher than that of G2 donkeys. Changes in P4 levels during draught were influenced by the stage of oestrous cycle; a significant increase ($P < 0.01$) being observed in donkeys in luteal phase and a decrease in donkeys in non-luteal phase. Consequent to draught stress, plasma P4 profiles associated with subsequent oestrous cycles were depressed ($P < 0.05$) in both groups of donkeys stressed during non-luteal phase than those stressed during the luteal phase. Plasma cortisol levels observed for all donkeys during a 3 h draught period registered significantly higher ($P < 0.05$) in non-supplemented than supplemented donkeys. These results demonstrate that draught stress may interfere with ovarian cyclic and endocrine functions of working female donkeys and this situation might be exacerbated by poor nutrition.