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PROTEOMIC CHARACTERISATION OF SERUM DURING THE BREEDING CYCLE IN MALE BACTRIAN CAMELS

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ABSTRACT

The duration of the breeding cycle in male Bactrian camels lasts 2–6 months, depending on geographical location, environmental conditions, nutritional parameters and health status. In China, the breeding cycle can span 4 months (December to March), except for this period libido is lost. Camels exhibit increased pacing and anxiety, and display morphological, behavioural and endocrinological peculiarities, including 16–25% weight loss due to suppressed appetite. Using label-free liquid chromatography-tandem mass spectrometry (LC-MS/MS) shotgun proteomics, we characterised the proteome at 4 key stages (pro-breeding, breeding, peak breeding and termination of breeding). We identified 210, 215, 220, 310 and 220 proteins in non-breeding (control) and breeding (stages 1 to 4) groups, respectively, of which 178 were common to all groups. Among these, 16, 20, 18 and 21 were differentially expressed ($p < 0.05$), with 4, 9, 11 and 11 up-regulated and 12, 11, 7 and 10 down-regulated in stages 1 to 4, respectively. Among differentially expressed proteins, 15 up-regulated and 8 down-regulated proteins were altered along with the breeding cycle. This is the first label-free proteomic characterisation of the Bactrian camel serum proteome. The findings provide new insight into temporal differences in serum protein composition in male Bactrian camel serum during the breeding cycle.

Key words: Bactrian camel, breeding cycle, protein serum proteome, shotgun proteomics