

SERUM VITAMIN E CONCENTRATIONS IN A GROUP OF HORSES, WITH A HIGH INCIDENCE OF EQUINE MOTOR NEURON DISEASE

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Low serum vitamin E concentrations ([vit E]_s) have been associated with Equine Motor Neuron Disease (EMND), a sporadic equine neurodegenerative disorder of unknown aetiology. The aim of this study was to follow [vit E]_s in a group of horses living in an area with high incidence of EMND. Eight horses living in an area where 3 cases of EMND had previously been confirmed (group B), and 10 healthy horses living in another area (group A), were selected for the study. Serum vitamin E concentrations were measured once in group A, and 3 times in group B: before (samples 1) and after (samples 2) 5 weeks of massive oral vitamin E supplementation, and 9 weeks after stopping supplementation and moving the horses to others premises (samples 3). Mean [vit E]_s values obtained in group B at samples 1 (1.06 ± 0.68 mg/L), samples 2 (0.86 ± 0.62 mg/L), and samples 3 (1.76 ± 0.78 mg/L) were significantly ($P < 0.001$) lower than mean [vit E]_s value obtained in group A (4.40 ± 1.14 mg/L). In group B, [vit E]_s obtained in samples 2 were not significantly different from the ones obtained in samples 1, but both were significantly ($P \leq 0.005$) lower than [vit E]_s obtained in samples 3. These results demonstrate that [vit E]_s can be low in horses living in an area with high incidence of EMND but not showing clinical signs of EMND, what is probably reflective of an increased oxidative stress predisposing to EMND. Furthermore, the fact that [vit E]_s did not increase in group B after massive oral supplementation, but significantly increased after moving the horses to others premises suggests that [vit E]_s depends not only on intrinsic and alimentary factors, but also on environmental and/or management factors. In conclusion, this study further supports the incrimination of low [vit E]_s as a risk factor for EMND, and suggests the involvement of environmental and/or management factors in the determination of [vit E]_s in horses.

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