

The effects of three different doses of sodium pentosan polysulfate on haematological and haemostatic variables in adult horses

From the study, *Dart AJ, #Perkins N, *Dowling BA, *Batterham T *Livingston C and *Hodgson DR (2001) *Australian Veterinary Journal*. 79 (9): 624-627
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Objective

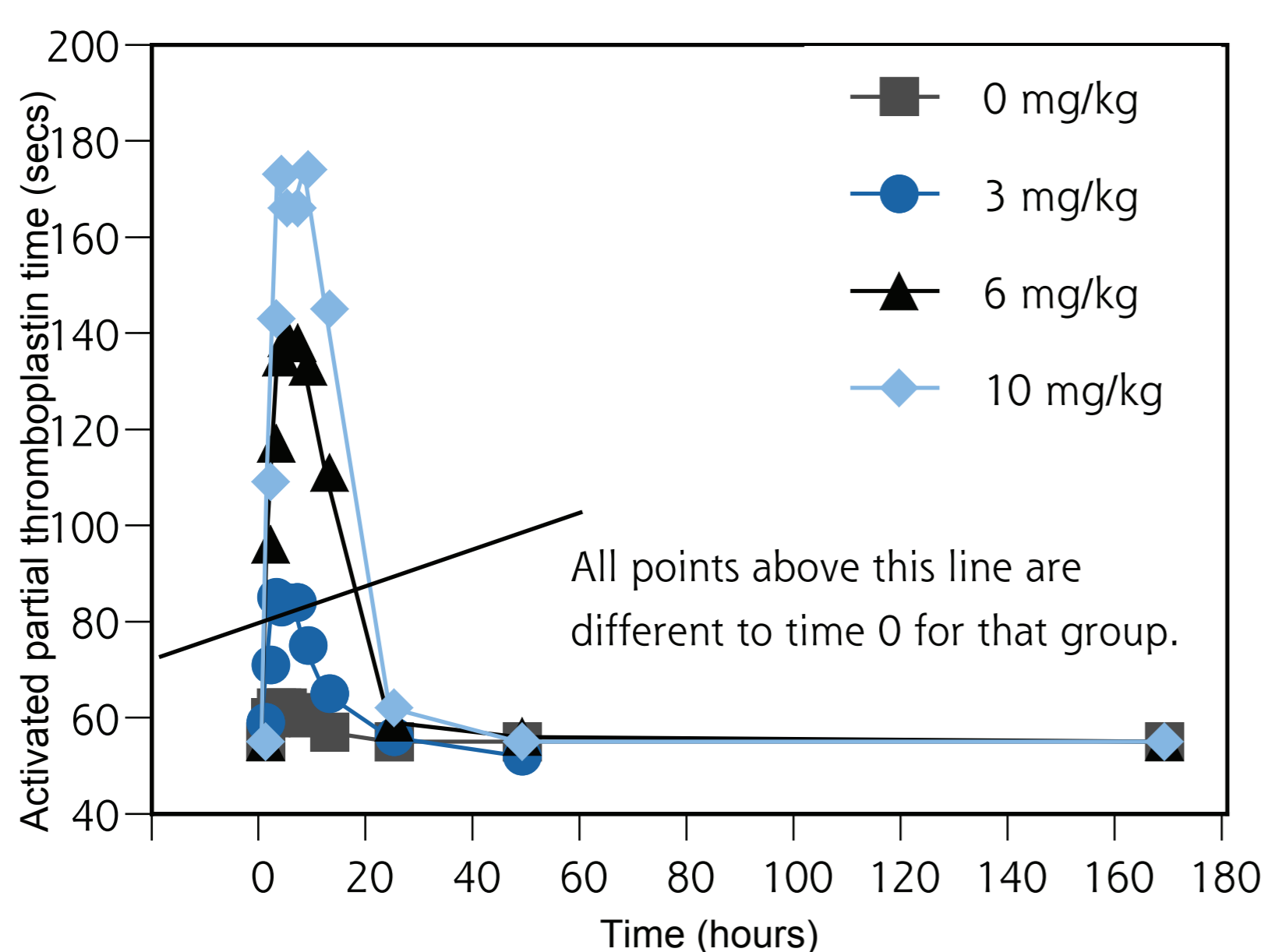
To evaluate the effects of three different doses of sodium pentosan polysulfate (PPS) on haematological and haemostatic variables in adult horses.

Methods

Eight adult standardbred horses were used. All horses received a single injection of 0, 3, 6 and 10mg/kg of PPS (Cartrophen Vet, Biopharm Australia Pty Ltd) at the beginning of each treatment week for 4 weeks so that by the end of the study all horses had received all four doses. Blood samples were collected at 0, 1, 2, 3, 4, 6, 8, 12, 24, 48 and 168 hours following each weekly injection of PPS. Variables measured were packed cell volume, haemoglobin, red blood cell count, mean corpuscular volume, mean corpuscular haemoglobin, mean corpuscular haemoglobin concentration, platelet count, white cell count (WCC), neutrophil count, lymphocyte count (LC), eosinophil count, monocyte count, serum protein, fibrinogen, prothrombin time (PT) and activated partial thromboplastin time (PTT).

Results

Changes in the geometric mean values of PTT with time following treatment with PPS.



Changes attributable to PPS administration were observed for LC and PTT. LC elevations were least at 3mg/kg, however, all increases were not substantially above normal reference ranges and did not influence WCC. A dose-dependent increase in PTT was observed. The small increase in PTT by 3 hours at 3mg/kg was transient and returned to baseline values by 24 hours. The increases in PTT at higher doses returned to baseline by 48 hours.

Discussion

The most clinically relevant effects of PPS on horses in this study were on the haemostatic system. PPS caused a dose-dependant prolongation of PTT but not PT demonstrating an effect on the intrinsic pathway of haemostasis. The anticoagulant and fibrinolytic properties of PPS have been well reported. The mode of action of PPS is similar to heparin in that it inhibits Factor Xa and its precursors in the intrinsic coagulation pathway, however, PPS shows much weaker effects on prothrombin activation and catalysis of factor Xa inhibition by antithrombin III than heparin. The net result is that *in vivo*, heparin is approximately six times more potent as an anticoagulant than PPS.

Conclusion

PPS causes a dose-dependant prolongation of PTT in horses. At the dose rates currently recommended for PPS in the treatment of joint problems in horses (approximately 2 to 3mg/kg), this increase was small and remained elevated from baseline for up to 24 hours. Based on these findings, PPS doses of up to 3mg/kg should not be administered to horses within 24 hours of high stress activities or where physical injury may occur.

Cartrophen
VET