

Effects of a commercial dose of L-tryptophan on plasma tryptophan concentrations and behaviour in horses.

[Noble GK](#)¹, [Brockwell YM](#), [Munn KJ](#), [Harris PA](#), [Davidson HP](#), [Li X](#), [Zhang D](#), [Sillence MN](#).

Author information

- ¹School of Agricultural and Veterinary Sciences, Charles Sturt University, Wagga Wagga, New South Wales 2678, Australia.

Abstract

REASON FOR PERFORMING STUDY:

L-tryptophan is a common ingredient in equine calmativ products, but its effectiveness has not been demonstrated in horses.

HYPOTHESIS:

To determine whether a commercial dose of L-tryptophan increases plasma tryptophan and alters behaviour in horses fed a roughage or concentrate meal.

METHODS:

L-tryptophan (6.3 g) or placebo (water) was administered per os in a cross-over design, to 12 Thoroughbred horses (503 +/- 12.1 kg bwt), just before a meal of lucerne hay or oats. Plasma tryptophan was measured by gas chromatography. Horse behaviour was observed in an empty enclosure, then in the presence of an unfamiliar person and a novel object.

RESULTS:

Total plasma tryptophan increased 3-fold in both studies, peaking 1.5-2 h after dosing. After the peak, tryptophan remained high for several hours if the horses had been fed hay, but fell sharply if fed oats, consistent with the glycaemic responses to these meals. However, the ratio of tryptophan to 4 large neutral amino acids (phenylalanine, tyrosine, leucine and isoleucine) increased in the tryptophan-treated horses to a similar extent and for a similar duration, with both diets. The presence of a stranger or novel object increased heart rate ($P < 0.05$), but caused no behavioural effects that were altered by tryptophan, regardless of the diet.

CONCLUSIONS:

Plasma tryptophan increases when tryptophan is administered at a dose used in some commercial products, but this is not reflected by marked behavioural changes in the horse.

POTENTIAL RELEVANCE:

Further work is required to refine behavioural tests and identify an effective dose of L-tryptophan in the horse.