QUESTION: Does a Curcumin-based oral supplement improve low-grade lameness in actively exercising horses?

Background

- Curcumin, the biologically active ingredient of turmeric, blocks the formation of pro-inflammatory molecules, inhibits inflammatory enzymes, and disrupts cell pathways by various mechanisms[1,2]. These powerful anti-inflammatory actions of curcumin have led to interest in its possible role in inflammatory conditions such as osteoarthritis[3,4].
- The amount of curcumin absorbed into the bloodstream after ingestion is low but can be increased considerably by the addition of a compound present in black pepper called piperine[5].
- A questionnaire of horse owners feeding turmeric found the average daily turmeric dose to be far below the estimated therapeutic dose (scaled up from studies in other species) of 165-220g turmeric, or 7g of curcumin, per day[6].

Aim of Study

To determine if a high dose of curcumin combined with piperine (AntiFlam, Science Supplements) could improve mild-moderate lameness in adult exercising horses.

Study Design

- *Placebo-controlled* = some horses received the curcumin-based supplement and some received a supplement with no active ingredients (placebo). Use of a placebo helps reduce bias (seeing a false positive result) and allows for the fact that an improvement might be observed from horses spontaneously improving.
- *Randomised* = which horses were given placebo was pre-determined by a random system rather than a person deciding at the time of seeing a horse. This removes bias in the results caused by selecting only certain horses (e.g. less lame horses) to have a particular treatment.
- *Double-blind* = none of the clinicians or data analysts knew which horses received the curcumin-based supplement and which received placebo supplement. Blinding removes bias caused by people wanting to see a positive effect with the active supplement e.g. by giving it to the least lame horses or grading these horses less harshly.

Study Outline

Fifty-six professional endurance horses in full work were used. Horses were not receiving any medication and had an initial (pre-trial) lameness score of less than or equal to 5 on a 10-point scale[7] at in-hand trot, in a straight line away and towards the evaluating clinician, on a level, flat and consistent concrete surface 30m in length. Horses were randomly allocated to receive AntiFlam or placebo supplement; 28 horses received AntiFlam and 28 received placebo. The placebo syringe was made with the same carrier, rice flour, turmeric residue (after removal of curcumin) and a yellow-orange food dye to give a similar texture, appearance and smell to the treatment product. AntiFlam or placebo was given as a syringe paste into the mouth immediately after pre-trial lameness reassessment and then 24h and 48h later (Figure 1). Lameness was reassessed at 72h (post-trial), i.e. 24h after last AntiFlam/placebo (Figure 1). Lameness assessors were unaware if horses received placebo or AntiFlam.

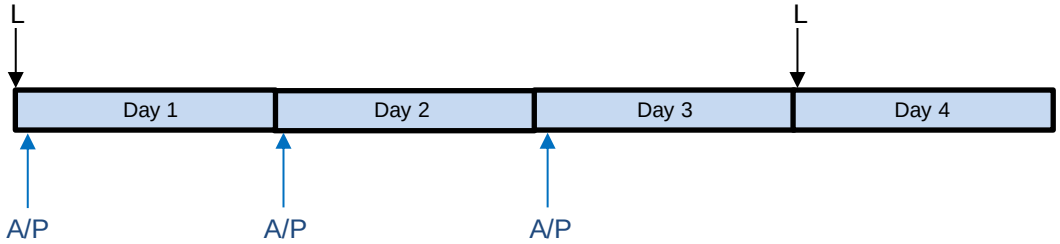

Figure 1: Schematic outline of study showing timing of lameness evaluations (L) and administration of AntiFlam (A) or placebo (P)

Study Results

- Two horses (both in placebo group) were not available for reassessment at 72h and were excluded from the study. Pre-trial and 72h lameness scores were therefore obtained for 28 horses receiving AntiFlam and 26 receiving placebo. Following AntiFlam administration 75% horses showed a decrease in lameness score (i.e. were less lame), 21% showed no change and 4% a worsening of lameness score (Table 1). In comparison, in the placebo group, only 12% horses improved, 46% showed no change and 42% deteriorated (Table 1).

Group	Improvement (%)	No change (%)	Deterioration (%)
AntiFlam (n=28)	75	21	4
Placebo (n=26)	12	46	42

Table 1: Change in lameness score of horses at 72h following administration of AntiFlam or placebo for three days.

- The lameness scores of the placebo and AntiFlam groups at the start of the trial were not significantly different (Figure 2) so there was an equal spread of lameness scores across both groups. Post-trial at 72h, lameness scores were significantly lower in the AntiFlam group compared to the placebo group (Figure 2). Compared to pre-trial, lameness was significantly improved at 72h in the AntiFlam group but was significantly worse in the placebo group (Figure 2).

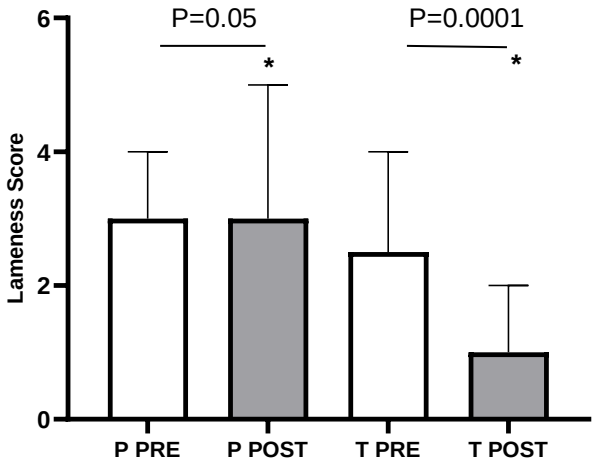

Figure 2: Median (+95% confidence interval) lameness scores of placebo and AntiFlam groups of horses before (PRE) and 72h after (POST) receiving placebo (P) or AntiFlam (T). Median lameness score was significantly decreased in the AntiFlam group at 72h compared to pre-trial (P=0.0001) whereas median lameness score was significantly increased in the placebo group at 72h compared to pre-trial (P=0.05). ***** denotes a significant difference between groups (P=0.0001).

Take Home Message

- After 3 daily doses of AntiFlam containing curcumin and piperine, lameness scores were significantly reduced in endurance horses in hard work compared with horses given a placebo.
- This daily dose of curcumin equates to two syringes of AntiFlam available in the UK.

References

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