

QUESTION: Does Feeding a D-Biotin and Calcium Supplement Improve Hoof Quality?

Background

- Poor hoof condition is common in all types of horses and ponies and can lead to practical problems such as splitting of the hoof and losing shoes as well as foot pain and lameness.
- Long-term feeding of biotin for 5-10 months has previously been shown to improve hoof horn quality and strength¹⁻⁴.

Aim of Study

To determine if oral supplementation of D-Biotin and calcium for three months improves hoof quality

Study Design

- *Prospective clinical case series* = a group of horses selected for a particular reason (poor feet in this study) was followed over several months.
- *Blinded* = the clinician grading foot photographs was unaware of the date taken and any client or horse details.

Study Outline

Twelve horses with poor hoof condition were fed 4Feet (Science Supplements) at the recommended dose, for 3 months, delivering 25mg high quality, highly bio-available Biotin daily. Horse owners submitted photographs of all 4 feet of their horse to document hoof quality at the start of the trial and once a month throughout the trial. At the end of the three months, the photographs were anonymised for horse, owner and month and scored by an equine orthopaedic veterinary specialist, Dr Rachel Murray (Rosssdales Equine Hospital). This scoring system grades eleven separate features of the hoof and has been previously validated⁵ (Table 1, Figure 1). The median score of all four feet was used for each hoof feature at each month time-point for data analysis as any effect of the hoof supplement would be on all feet.

Feature	1	2	3	4	5
Coronary band	Straight	Concave	Convex	Damaged	
Horn tubule orientation	Parallel	Non-parallel			
Growth rings	Non-divergent	Divergent			
Dorsal hoof wall	Straight	Concave	Convex		
Bleeding	Absent	Present			
Periople	Smooth	Rough			
Cracks – number	None	Few	Many		
Cracks – location	Edge of sole	Bottom ¼	Bottom ½	Bottom ¾	Entire wall
Hoof wall surface	Smooth	Rough			
Wall solar margin	Intact	Powdery	Broken		
Shoeing	Shod	Unshod			

Table 1: Scoring system for hoof evaluation⁵

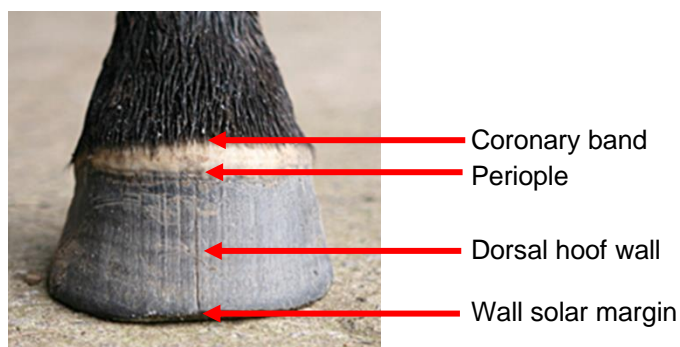


Figure 1: Horse hoof showing areas of interest for scoring.

Study Results

- All horses ate the supplement without palatability issues.
- Median hoof score decreased (i.e. hoof quality improved) for the features dorsal hoof wall, hoof wall surface, wall solar margin and shoeing from the start of the trial to 3 months (Figure 2).

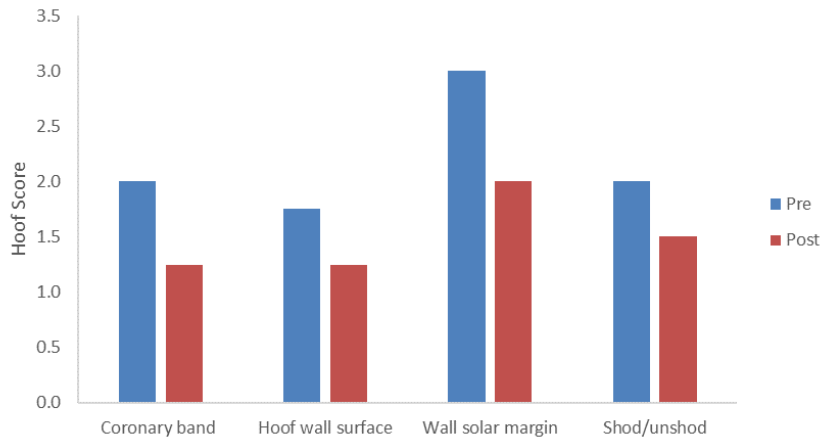


Figure 2: Median hoof evaluation scores⁵ for 12 horses before and after 3 months of hoof supplementation with 4Feet (Science Supplements).

Take Home Message

- Feeding a Biotin and calcium oral supplement daily for 3 months improved the score of certain hoof quality features. Feeding for a longer period than three months may be required for some hoof parameters to improve.

References

1. Buffa et al. (1992) Effect of dietary biotin supplement on equine hoof horn growth rate and hardness. *Equine Vet J.* 24: 472-474.
2. Josseck et al. (1995) Hoof horn abnormalities in Lipizzaner horses and the effect of dietary biotin on macroscopic aspects of hoof horn quality. *Equine Vet J.* 27: 175-182.
3. Zenker et al. (1995) Histological and physical assessment of poor hoof horn quality in Lipizzaner horses and a therapeutic trial with biotin and a placebo. *Equine Vet J.*27(3):183-91.
4. Reilly JD et al. (1998) Effect of supplementary dietary biotin on hoof growth and hoof growth rate in ponies: a controlled trial. *Equine Vet J Suppl.*(26):51-7.
5. Adapted from: Dyson et al. (2011) External characteristics of the lateral aspect of the hoof differ between non-lame and lame horses. *Vet J.* 190(3):364-71.