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ABSTRACT BOOK



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The effect of short-term consumption of sainfoin (*Onobrychis viciifolia*) or extra proteins on strongyle infection in horses

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The expanding diffusion of anthelmintic resistance in horse small strongyle nematodes stresses the need to explore alternative solutions for a sustainable control of these parasites. The potential of secondary metabolites of bioactive plants or of improved nutrition for increasing host response to parasites has been documented in ruminants but little evidence exists for horses. Here, we investigated the efficacy of a short-term consumption of sainfoin (*Onobrychis viciifolia*), a tannin-rich plant, or of extra proteins in naturally infected horses. Thirty horses were divided into three groups of 10 individuals receiving for 18 days either i) a tannin-rich diet with 70% DM of sainfoin pellets and 30%DM of wheat straw (3.6%DM of condensed tannins in the diet) (SD), ii) a protein-rich diet with 52% DM of Italian rye-grass pellets, 18% DM of grinded linseed expeller and 30%DM of wheat straw (PD), or iii) a control diet with 45% DM barley, 25% DM cereal-based pellets and 30%DM of wheat straw (CD). The three diets were isoenergetic, covering on average 94% of animal energy requirements while the SD and PD diets provided extra proteins (227% of protein requirements vs. 93% for the CD diet). Comparing PD and CD thus allowed testing for the benefits of receiving extra proteins, while comparing SD and PD accounted for the effect of sainfoin secondary metabolites. Neither faecal egg counts, nor worm counts in the faeces of drenched horses at the end of the experiment did reveal any difference between the feeding regimes. Interestingly, routine coprocultures from the faeces collected in each group suggested a lower rate of strongyle larval development in the SD group (SD: 8.1%, PD: 30.5%, CD: 22.6%). This was confirmed by two tests performed *in vitro*: adding 29% of sainfoin extract in faeces reduced by 82% the development of strongyle eggs into infective larvae ($P<0.001$), and egg hatching was reduced by 37% ($P<0.05$) using solutions with a minimum sainfoin concentration of 7.5 mg.mL⁻¹. Our hypothesis that protein enrichment could increase the resistance of parasitized horses was however rejected maybe because proteins were not limited enough by the level of infection. Overall, our study reports for the first time that the short-term use of sainfoin in horse diet could constitute a promising means to reduce infectivity of pastures due to reduction of development of eggs into infective larvae.