



## Congress proceedings

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### Impact of two different diets on faecal parameters of horses

Raspa F.<sup>1</sup>, Cavallini D.<sup>1,2</sup>, Vervuert I.<sup>3</sup>, Valvassori E.<sup>4</sup>, Mammi L.M.E.<sup>2</sup>, Bergero D.<sup>1</sup>, Valle E.<sup>1</sup>  
<sup>1</sup>Veterinary Sciences, University of Turin <sup>2</sup>Veterinary Sciences, University of Bologna <sup>3</sup>Veterinary Medicine, Leipzig <sup>4</sup>Public  
 veterinary service, Italy. e-mail: federica.raspa@unito.it

**Introduction.** Forages represent the dietary basis of horses, while high amounts of starch can impact their intestinal health [1]. Since few studies are conducted on the faecal parameters (faecal quality and proximate analysis through near-infrared reflectance spectroscopy - NIR), this study aimed to evaluate differences in faecal parameters among horses either fed with a forage-based diet or fed with high amounts of concentrates.

**Animals, material and methods.** Samples of fresh faeces were collected after defaecation from 18 healthy horses (mean ( $\pm$ SD) age 4.78 $\pm$ 1.17). 9 horses were fed hay ad libitum (hay group-HG). 9 horses were fed hay and 8 kg/animal/day of a cereals pellet (hay+concentrate group-HCG) supplied in 2 meals/day. Hay used was first-cut meadow with green colour. Concentrate was based on corn and barley feed (crude protein 14.50%, ether extract 3.50%, crude fibre 5.70%, ash 6.60%). Faeces were scored for faecal colour (FCI) and faecal consistency (FCn). FCI was scored through a scale developed by the authors (brown, grey, brown/yellow, brown/green, green). FCn was scored as described by Berg et al. [2]. Faecal hardness (FH) was measured in 50 g fresh faeces with a fruit penetrometer (GY2, Beslands). Faecal pH (FpH) was measured with an electronic pH meter (precision $\pm$ 0.01; Hach-Lange). FH and FpH were measured in triplicate. Fresh faeces (150 g) were dried in a forced ventilation oven (55°C for 72 hours). After drying, samples were grinded (1-mm sieve) for determining faecal components (neutral detergent fiber-NDF, acid detergent fiber-ADF, acid detergent lignin-ADL, crude protein-CP, starch, and ash) through NIR. Statistical analysis was performed (SPSS 21.0). Data were compared by Student t-test ( $P < 0.05$ ). Frequency of scores (%) for FCI and FCn was assessed by using Chi-square test.

**Results and discussion.** Faecal parameters varied between the diets (Table 1). There were effects of the diet on FCI and FCn ( $P = 0.001$ ): samples were scored brown/green with 3/5-points score for FCn in HG; and grey with 5/5-points score for FCn in HCG.

**Table 1.** Faecal parameters in HG and HCG. Data are expressed as mean $\pm$ SD

	DM %	FpH	FH kg/cm <sup>2</sup>	NDF %DM	ADF %DM	ADL %DM	CP %DM	Ash %DM	Starch %DM
HG	26.40 $\pm 1.17$	6.77 $\pm 0.21$	3.55 $\pm 0.80$	75.85 $\pm 0.67$	55.30 $\pm 0.33$	20.99 $\pm 0.62$	6.87 $\pm 0.42$	10.67 $\pm 0.42$	0.15 $\pm 0.82$
HCG	17.74 $\pm 1.97$	6.01 $\pm 0.34$	2.07 $\pm 0.64$	65.68 $\pm 1.81$	45.42 $\pm 1.17$	15.60 $\pm 0.96$	10.73 $\pm 0.42$	10.95 $\pm 0.28$	2.00 $\pm 0.37$
P	<.01*	<.01*	<.01*	<.01*	<.01*	<.01*	<.01*	0.58	<.01*

**Conclusion.** Diet has an impact on DM, faecal consistency, pH or faecal components. In HG, brown/green colour of faeces and harder consistency reflect the impact of hay intake on the faeces quality and intestinal health [3]. Faecal pH of 6.77 in HG reflects a typical fiber fermentation profile in the large intestine. The lower faecal pH in HCG seemed to be related to a higher starch fermentation profile with lactate production in the hindgut. This work highlights the evaluation of faecal parameters as useful tool to monitor the effects of diet on intestinal health.

**References:** [1] Durham *Vet.Clin.EquinePract.* 2005,83,1549–1553 [2] Berg *Anim.Sci.* 2005,83,1549–1553 [3] Correa *Livest.Sci.* 2016,186,41–45