ENTEROCOCCUS FAECIUM AL41 AND ITS APPLICATION IN HORSES

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Introduction:
Horses microbiota as well as their optimization by the use of e.g. probiotic bacteria to maintain a good health condition is still open area for researchers but also for breeders or owners. In horses, disorders due to pathogenic bacteria involve ehrliosis, salmonellosis, clostridiosis or disorders caused by B group streptococci (Lavoie et al., 2000). It is well-known that probiotic bacteria can provide benefits in animals. Our Laboratory of Animal Microbiology has dealt with probiotic bacteria (especially those bacteriocins-antimicrobial substances producing) for years. Based on benefits achieved previously after application of Enterococcus faecium AL41 (our probiotic, Enterocin M-producing strain) in food-producing animals e.g. in rabbits or poultry (Lauková et al., 2012, 2014, 2015), we decided for its experimental application in horses.

Methods:
Eight mares and three horses—geldings of different breeds (Norik breed Muráň Plain, English hot-blooded, Slovak hot-blooded, Hucul breed) were involved in the experiment. They were fed twice a day with hay and oats, alternatively grazed. Experiment lasted for 14 days during autumn 2014. Faeces and blood were sampled at the start of experiment (day 0/1), then on day 14 (after 2 weeks of E. faecium AL41 application). Blood was sampled from vena jugularis. E. faecium AL41 was prepared as previously indicated Lauková et al. (2012)-109 cfu/ml. The dose of strain (1 g per 1 animal per day) was applied into the diet, in the small part-bolus. Animals had the attitude to water ad libitum. Microbial analyses were performed according to ISO methods and media. AL41 strain was marked by rifampicin to differ it from the other enterococci on M-Enterococcus agar with rifampicin, confirmed by PCR and MALDI-TOF spectromerty. Phagocytic activity (PA), biochemical parameters were also tested.

Results:
E. faecium AL41 sufficiently colonized digestive tract of horses; on day 14 its average count was 2.35 (0.70) cfu/g (log10). The total enterococci reached 3.52 (0.73) cfu/g (log10) in average; lactic acid bacteria counted 5.62 (0.38) cfu/g. The counts of other bacteria were not high and they were not influenced by AL41 strain, except Aeromonas sp.; their significant decrease was noted (p<0.001). On day 14, PA increasing tendency was detected; an average PA value on day 0/1 was 73.13 (8.55) and on day 14 75.11 (8.66) %. Biochemical parameters were not influenced by AL41 strain or they were optimized in the physiological range.

Discussion:
In spite of the preliminary results, they have importance from the basic point of view (stability and colonization of strain AL41, PA). The originality of our study is own isolate, bacteriocin–producing, probiotic E. faecium strain applied in horses. VEGA 2/0004/14, VEGA 2/0012/16.

Keywords: Horses, Probiotic, Enterococcus faecium, Effect

References: