

## PERFORMANCE OF HORSES FED BIORACING<sup>®</sup>

### BRZINA TRKA KONJA HRANJENIH PROBIOTIKOM BIORACING<sup>®</sup>

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#### SUMMARY

Official track records of racing Standardbred horses were used to compare the performance of untreated horses with horses fed a commercially available probiotic feed supplement. Racing times of the two groups were not different before treatment. In the treated group fed probiotic for two weeks, 31 of 59 horses (52.5%) ran faster than they did the month before treatment while 16 of 50 (32%) of the untreated group ran faster ( $p=0.0244$ ). Forty percent of treated horses ran at least 0.5 second faster while 22% of untreated horses ran at least 0.5 second faster ( $p=0.0438$ ). Erythrocyte count, haemoglobin and haematocrit were significantly increased in various and mixed breed horses fed the probiotic for four months while 14 other blood parameters were not affected.

#### INTRODUCTION

Dietary substances are well known to be linked with growth, health and performance of man and animals (Fuller, 1989). Probiotic feed supplements have been increasingly used to enhance athletic performance of humans. The present study was conducted to determine if performance of racing horses could be significantly affected by feeding a probiotic supplement used in animal feeds. The probiotic used was Bioracing<sup>®</sup> (Chemoforma, Ltd., Augst, Switzerland). It is an all natural product of balanced purine and pyrimidine bases mixed with naturally arising organic acids of intermediary metabolism and vitamins. Thermolyzed dry yeast, distillers and sized corn flour act as carriers. Improved growth and immune responses (Havenaar and Spanhaak, 1994) have been demonstrated when probiotics were fed to pigs (Vanabelle et al., 1990) and chickens (Jernigan, 1985).

#### MATERIALS AND METHODS

Racing Standardbred horses were randomly selected at the Maywood Racetrack at Maywood, Illinois. Their racing times were collected from published official records at the track during the month of October only for races performed on a dry track that was officially listed as "fast". Horses then were randomly assigned to treatment or untreated control groups. Each treated horse was fed one teaspoon (approximately 3 cc) Bioracing<sup>®</sup> twice daily for 14 days. Racing times of all horses were collected from official track records for the next four

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weeks. Racing times before treatment were averaged for each horse, and racing times after treatment were averaged for each horse. Racing times for the same period were averaged for each untreated horse.

Racing times in October for principals and controls were compared by a pooled t test. Differences in racing times before and after treatment, or comparable times for control horses, were compared by paired t tests. Treated and untreated groups were analyzed by comparing the ratios of horses with shorter racing times, using Fisher's exact test.

Another group of various and mixed breed horses in Croatia were fed Bioracing for four months. Uncoagulated blood and serum samples were collected from these and comparable untreated horses on 0 day, 6 weeks and 4 months. Erythrocyte count, haemoglobin, haematocrit, sedimentation rates at 30, 60 and 120 minutes, leukocyte count, total bilirubin, direct bilirubin, indirect bilirubin, total serum protein, serum albumin, globulin, alkaline phosphatase, thymol precipitation, thymol flocculation, aspartate serum transaminase, aspartate leucine transaminase and gamma glutamyl transpeptidase were analyzed by conventional methods (Duncan and Prasse, 1986). Statistical analysis was done by analysis of variance at  $\alpha = 0.05$ , using Tukey's post hoc test.

## RESULTS AND DISCUSSION

Standardbred horses were chosen to compare racing times because these horses race frequently with very little variability in racing time throughout the racing season. There was no difference in racing times between the two groups before or after treatment (Table 1). Whereas a fraction of a second may not be numerically significant, it can be highly significant in a race. Thus, an appropriate statistic would be a comparison of the percentage of horses that ran faster after treatment. In the treated group, 31 of 59 horses (52.5%) ran faster while 16 of 50 horses (32%) in the comparable untreated horses ran faster  $p = (0,0244)$ . If a difference in racing time of 0.5 second were selected as a criterion for running faster, 23 treated and 11 untreated horses ran faster, which still is significant ( $p = 0.0438$ ). Improved racing times in a significantly larger proportion of treated horses, and by as much as 0.5 second in many of them, is an impressive difference. A difference of 0.5 second is one to two lengths and could easily be a winning margin. Unfortunately, predictability for an individual treated horse in any particular race is not reliable because

47.5% or 60%, depending on the criterion, did not run faster.

**Table 1. Mean racing times in second of Standardbred horses fed and not fed Bioracing®.**

**Tablica 1. Srednje vrijeme trka u sekundama standard bred konja hranjenih i nehranjenih probiotikom Bioracing®**

Group-Skupina	Number-Broj	Before treatment-Prije tretmana	After treatment-Poslije tretmana
Treated horses-Tretirani konji	59	121.03±1.95	120.99±1.64
Untreated horses-Netretirani konji	50	121.74±1.87	121.14±1.64

**Table 2. Erythrocyte counts (RBC), haemoglobin (HGB) and Haematocrit (HT) in horses fed and not fed Bioracing® for four months.**

**Tablica 2. Broj eritrocita (RBC), Hemoglobin (HGB) i Hematokrit (HT) u konja hranjenih i nehranjenih probiotikom Bioracing® tijekom četiri mjeseca**

Parameter-Pokazatelj	Duration fed-Trajanje hranjenja	Untreated horses-Netretirani konji	Treated horses-Tretirani konji
RBC ( $10^6/\mu\text{L}$ )	0 day 0 dana	4.69	5.04 <sup>a</sup>
	6 weeks 6 tjedana	5.26	5.01 <sup>a</sup>
	4 months 4 mjeseca	5.69	6.37 <sup>b</sup>
HGB (g/dL)	0 day 0 dana	6.79	7.50 <sup>a</sup>
	6 weeks 6 tjedana	7.14	7.25 <sup>a</sup>
	4 months 4 mjeseca	7.10	9.07 <sup>b</sup>
HT (%)	0 day 0 dana	32.5 <sup>a</sup>	34.5 <sup>a</sup>
	6 weeks 6 tjedana	41.3 <sup>a</sup>	37.1 <sup>a</sup>
	4 months 4 mjeseca	53.0 <sup>b</sup>	47.9 <sup>b</sup>

Values are means of 10 horses. Values with different superscript letters within a column are different,  $\leq 0.05$ .

Vrijednosti su prosjek za 10 konja. Vrijednosti označene slovima (<sup>a</sup>, <sup>b</sup>) razlikuju se za  $\leq 0.05$ .

Clinical data on blood and serum from Croatian horses fed Bioracing® for four months did not reveal any undesirable affects on the parameters measured. All values were in the normal range in treated and untreated horses except for erythrocyte count, haematocrit and haemoglobin that were significantly increased in treated horses at 4 months (Table 1). Untreated horses had increased haematocrit at four months. Horses with these changes would be expected to run faster but they cannot be used to explain the faster running times because the faster running times were observed during the six weeks after treatment had begun and increases in clinical values were not observed until after six weeks of treatment. It is possible that individual horses may respond quicker and the horses that ran faster may have had elevated

blood parameters, but these measurements were not done on the Standardbred horses.

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#### SAŽETAK

Službeni rezultati trka trkačih konja Standardbred su korišteni za usporedbu radnog učinka konja, hranjenih s i bez dodatka probiotika, dostupnog na tržištu. Prije primjene probiotika, postignuta vremena na trkama se nisu razlikovala među skupinama. U skupini, koja je dva tjedna, hranom, primala probiotik, 31 od 59 konja (52,5%) su trčala brže nego mjesec dana prije tretmana, dok je 16 od 50 (32%) netretiranih konja trčalo brže ( $p=0.0244$ ). Četrdeset posto tretiranih konja je trčalo bar 0.5 sekundi brže, dok je 22% netretiranih konja trčalo bar 0.5 sekundi brže ( $p=0.0438$ ). Broj eritrocita, hemoglobin i hematokrit su bili znatno povišeni u različitim i miješanih pasmina konja hranjenih probiotikom četiri mjeseca, dok 14 drugih vrijednosti, mjenjenih u krvi, nije bilo promijenjeno.

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