Heart rate of horses undergoing aerobic exercise and supplemented with gamma-orzyanol

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Introduction

The heart rate has been conventionally used as an indicator of respiratory and circulatory functions of horse (HODGSON et al., 1994), and its measurement during exercise allows to quantify the intensity of the workload and monitor the fitness, becoming an important tool for the maximization of any training program, both for athletes of the human species (LINDINGER, 1999) as for the equine (TRILK, 2002).

This study aimed to evaluate the heart rate of horses submitted to aerobic exercise and supplemented with gamma-orzyanol as well as recovery time after exertion.

Material and methods

• The experiment was conducted at the Laboratory for Research in Food and Exercise Physiology in Equine (Labequi) - FMVZ / USP – Pirassununga, during 180 days.

• 10 Arabian horses, geldings, aged 35 ± 8.15 months and body weight of 375 ± 22.78 kg, divided into control group and treatment group (gama).

• Individual daily consumption of 2% body weight/dry matter, 50% concentrate and 50% forage - Tifton 85 hay and commercial concentrate.

• All horses received 50 mL of vegetable oil added to the feed at meal time, the treated group received gamma-orzyanol (5 g/meal) mixed within vegetable oil. Both groups were exercised into circular walker for 60 minutes at maximum speed of 12 km/h, five times per week.

• Measurements were made monthly in heart rate (HR) of all animals using digital monitors adapted for horses. At each time, we obtained the HR: baseline, maximum, ultimate, 10 and 20 minutes after the end of the exercise.

Results and discussion

• Time interaction was observed treatment (p<0.05), where the animals supplemented with gamma-orzyanol showed lower HR 20 minutes after the end of training, compared to the control group.

• The animals had lower basal HR over time, which can be explained by the effects of physical conditioning.

• In submaximal exercise, HR becomes smaller with the progression of training and increased aerobic capacity (OHMURA et al., 2002) and fatigue is mainly associated with intramuscular glycogen depletion and oxidative stress (RIVERO & PIERCY, 2011). In the current study, we consider that one or some of the various properties of gamma-orzyanol can postpone fatigue in these animals over time.

Table 1: Average heart rate (HR, in bpm), standard error of the mean (SEM) and p-value for control and gama groups

<table>
<thead>
<tr>
<th>Variables</th>
<th>Treatment</th>
<th>SEM</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR baseline</td>
<td>Control</td>
<td>41,80 ± 5,76</td>
<td>0,67</td>
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<tr>
<td>HR maximum</td>
<td>Gama</td>
<td>40,37 ± 5,49</td>
<td>3,99</td>
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<tr>
<td>HR ultimate</td>
<td>Control</td>
<td>63,79 ± 21,07</td>
<td>2,79</td>
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<tr>
<td>10’after</td>
<td>Gama</td>
<td>48,52 ± 9,44</td>
<td>1,53</td>
</tr>
<tr>
<td>20’after</td>
<td>Control</td>
<td>46,21 ± 9,48</td>
<td>1,22</td>
</tr>
</tbody>
</table>

Discussion

Supplementation with gamma-orzyanol of horses undergoing aerobic activity is beneficial and may reduce heart rate recovery of animals over time.

References


