

5th International Conference "Agriculture for Life, Life for Agriculture"

Research regarding Blood Glucose Dynamic in Horses Used at Complete Trial Competition

Eugenia ȘOVĂREL*

University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Marasti Blvd, 011464, Bucarest-1, Romania

Abstract

The choice for this paper was determined by the necessity to identify some practical and objective ways to evaluate the energetic and effort capacity at sport horses, which serve to measure the period and intensity of training and to appreciate the effects of training over the level of physic preparation.

Biologic material used for researches was represented by 15 sport horses from Dinamo Club-Bucharest, animals which come from the effective of Jegălia and Cislău studs.

The method used for researches consists in transformation of glucose, under glucozo-oxidases action in gluconic acid and oxygenate water.

The blood glucose value, at horses used in complete trial competition, oscillated depending on trial' type and increased obviously after effort. The differences between the glucose values before and after effort were very significant for steeple chase and jumping trials and insignificant for cross country.

© 2016 Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the University of Agronomic Sciences and Veterinary Medicine Bucharest

Keywords: horse, jumping, sanguine glucose, steeple chase

* Corresponding author. Tel.: +4072-276-4211
E-mail address: eugenasovarel@yahoo.com

1. Introduction

For humans, the horse was a devoted friend, but also a valuable aid, passing through various stages, from knowledge to passion, from art to science.

In order to obtain a high-performance in horses used in equestrian sports is necessary to pursue and achieve a balance between energy production and energy use.

Energy excess and deficiency and energy excess through dietary intake may negatively influence performance.

Over sizing of the effort in these conditions can lead to degradation of health.

Physical effort required by the equestrian competitions, determine the behavioral study of the main energetic precursors (glucose, triglycerides, lipids, etc.), and only the sustained physical effort is the way to make an objective analysis of these precursors.

Success and failure in competitions and also the health of sport horses depend on this analysis.

At horses used at complete trial competition, in steeple chase and cross country trials, there was dominated type of maximum effort, in which, at least theoretically, the major amount of energy comes from lactic anaerobic metabolism of glucose.

The same type of effort, and therefore the same type of energy metabolism, provides energy in jumping trials.

This metabolic pathway used, as is well known, as the sole substrate glucose-6-phosphate, comes from either plasma glucose or from glycogenolysis, which provide chemical reactions with consumption of ATP and which are carried out in sarcoplasm in the lack of oxygen (Lehninger, 1987; Eaton 1994; Ciuraru, 1997, 2000).

The observations purpose in this work was to monitor the changes in glucose concentrations before and after exercise in horses at complete trial competition.

2. Materials and Methods

The biological material studied was represented by a total of 15 sport horses, which belong to Dinamo Bucharest Sports Club.

There were studied both females (33.33%) and males (66.67%), aged 5 to 10 years and over 10 years old.

Horses belong to Romanian Horse Sport and English Pure Blood, which are specialized and well trained for complete trial competition (table 1 and figures 1, 2, 3).

Table 1. The biological material

| Specification | | Total | n | % |
|---------------|---------------------------|-------|----|-------|
| Breed | Romanian Race Horse Sport | 15 | 9 | 60.00 |
| | English thoroughbred | | 6 | 40.00 |
| Age | 5-10 years old | 15 | 7 | 46.67 |
| | over 10 years old | | 8 | 53.33 |
| Gender | Males | 15 | 10 | 66.67 |
| | Females | | 5 | 33.33 |

Analyzes were carried out from heparin plasma with the addition of sodium fluoride. Collected blood was transported to the laboratory on ice, in cooler bag. Time has not exceeded 4 hours from harvesting to processing and the temperature was kept between 0-4 °C.

Determination was ensured by an enzymatic reaction that triggers the reaction of color based on molecular spectroscopy measurements. It consists in converting glucose into gluconic acid and hydrogen peroxide, which also passes into a red color sophisticated combination.

The intensity of the color depends on the initial amount of glucose in the sample. Blood glucose was determined using Screen Master Plus spectrophotometer. The obtained values were statistically calculated and also there were determined the difference significations.

Download English Version:

<https://daneshyari.com/en/article/4492175>

Download Persian Version:

<https://daneshyari.com/article/4492175>

[Daneshyari.com](https://daneshyari.com)