

RESEARCH REGARDING THE CHANGES OF BIOCHEMICAL PARAMETERS AT YOUTH CUNICUL FROM GIANT BELGIAN BREED

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Abstract

The determination of blood biochemical parameters in young cunicul aged from 0 to 4 months, allows the physiological status interpretation in order to characterize the productive future of these individuals. The biochemical parameters analysis (total protein, triglycerides, cholesterol, glucose, amylase, ALT, AST, Ca, Fe, Mg, P) leads to the metabolic and functional interpretation of the physiological status useful for interpreting the application of some growth and exploitation factors for the studied species. The technology selection for growth, maintenance, nutrition, breeding is argued by the physiological and nutritional metabolic comfort established between the animal and environment. The obtained results lead to a biochemical characterization of the Giant Belgian half breed, widely dispersed in household systems, highlighting the differences between the age groups and allow the possibility of metabolic status interpretation through the presented values dynamic.

Key words: metabolic profile, protein content, youth cunicul, blood biochemistry

INTRODUCTION

The body as a biological system, for the normal course of his functions, needs a variety of substances (essential amino acids, carbohydrates, lipids, vitamins, mineral substances, water) which he needs to procure from the environment [4,5]. Their insurance should have a rhythmic and balanced character from a quantity and quality point of view [3].

For the newborn, the primary sources of protein are the protein macromolecule from the colostrum, rich in gamma-globulin, and their absorption is taking place in 24 ÷ 36 hours [1]. The passive immunity conferred in this way has a period of several weeks [2].

MATERIAL AND METHODS

Rabbits: a number of 21 individuals were taken in study, aged between 30 and 120 days.

Work technique: blood samples were collected from safena vein using 21G 1½" needles in vacuum system in cuvettes.

Biochemical tests: determinations were performed regarding the total protein,

glucose, triglycerides, amylase, AST, ALT, Fe, Ca, Mg with biochemical analyzer - Access 2000.

RESULTS AND DISCUSSIONS

The values of the main biochemical parameters showed a specific trend according with the parameter and the age of youth cunicul. Thus, the protein content presented an upward dynamic in the 1st month of development, registering a maximum of 3.98 g/dL, with a slight downward curve in the 4th month until the value of 3.72 g/dL was reached. The minimum protein quantity was reached in the 1st month, its value being 3.61 g/dL.

The maintaining of blood sugar homeostasis is one of the most important metabolic functions in the body. Glucose metabolism in rabbits is different from that seen in dogs and cats, because they feed almost continuously throughout the day and use volatile fatty acids produced by caecal flora as a source of primary energy.

Glucose, the main carbohydrate substance in plasma, represents the preferentially "fuel"

of all cells in the body, especially for the red blood cells and central nervous system tissue.

The maximum glucose content was observed at the age of 4 months, with a value of 144.3 mg/dL, while the lower limit of the glucose content was obtained at the half of this age, i.e. 2 months, with a value of 64.7 mg/dL.

The triglyceride content presented an upward curve until the 4th month of the

physiological development in young cunicul, being registered a minimum of 56.1 mg/dL in the 1st month and a maximum of 130.7 mg/dL in the 3rd month. The 4th month marks a slight regression of the upper limit to a level of 93.3 mg/dL.

The cholesterol concentration has a sinusoidal trend, with a minimum of 76.9 mg/dL in the 3rd month and a maximum of 156.8 mg/dL in the previous month (table 1).

Table 1
Changes in average parameters of total protein, glucose, triglycerides and cholesterol in youth

Nr. crt.	Age	Total Protein (g/dL)	Glucose (mg/dL)	Triglycerides (mg/dL)	Cholesterol (mg/dL)
1	1 month	3.61	107.6	56.1	121.1
2	2 months	3.79	64.7	87.8	156.8
3	3 months	3.94	88.2	130.7	76.9
4	4 months	3.72	144.3	93.3	124.1

Amylase, unlike other species, at rabbit is a pancreatic enzyme almost pure, with a small proportion of salivary glands, intestinal or liver tissue. The amylase is produced by the caecal microorganisms, being present in the caecotrophes, participating in the conversion of glucose into lactic acid during digestion.

The increased level of amylase in rabbits reflects pancreatic dysfunction due to pancreatitis, obstruction of pancreatic channels, peritonitis, and abdominal trauma.

The amylase content is constant during the first 2 months of development, presenting a maximum of 257 U/L, the minimum being recorded in the 3rd month, 157.7 U/L. The minimum content of AST was 51.8 U/L, the maximum was recorded in the 4th month of life, being 136.7 U/L (table 2).

If at the other species of mammals, the ALT is a good indicator of hepatocytes lyses

due to its specificity for the liver tissue and its long half-life (45 ÷ 60 hours in dogs), at rabbits the ALT cannot be used as an indicator of liver disease due to its short half-life (5 hours).

An increase in the level of ALT can usually be observed at the clinically healthy rabbits, due to the exposure to low concentrations of toxic substances such as resin of wood debris or because of the aflatoxins from aliments.

Elevated ALT levels associated with increased levels of ALP, bilirubin, and GGT may be associated with hepatic steatosis.

As regards the ALT concentration it has been recorded in the 1st month a minimum of 79.1 U/L and a maximum in the 3rd development month of 112.4 U/L and. The curve follows an upward trajectory until the 3rd month, followed by a slight decrease (table 2).

Table 2
Changes in average parameters of enzymes and minerals in young cunicul

Nr.crt	Age	Amylase (U/L)	AST (U/L)	ALT (U/L)	Ca (mg/dL)	Fe (µg/dL)	Mg (mg/dL)	P (mg/dL)
1	1 month	257.0	65.0	79.1	14.65	316.9	2.74	6.8
2	2 months	257.0	79.4	93.1	11.99	281.1	2.33	4.3
3	3 months	157.7	51.8	112.4	16.07	292.9	1.89	5.4
4	4 months	187.8	136.7	104.2	17.23	453.3	1.95	7.2

The mineral content has varied, the upper or lower limits are more or less expansive: calcium recorded a minimum of 11.99 mg/dL in the 2nd the month of cunicul youth development, while at the end of the 4th this value reached a maximum of 17.23 mg/dL (table 2).

The rabbit has a particular type of calcium metabolism, characterized by highly variable seric concentrations levels, with 30 ÷ 50% higher than at the other mammals, the normal limit was wider compared with other species. The youth and the pregnant does use more calcium, resulting a lower levels of blood calcium, often surpassing the value of 14 mg/dL, even when some rations rich in calcium are given. The rate of calcium excretion in urine at rabbits is 45 ÷ 50 %, while the most of the mammals do not secrete more than 2%.

The subjects taking the study presented large differences between the maximum and minimum levels of iron, ranging from 281.1 mg/gL in the 2nd month and 453.3 mg/dL in the 4th month of physiological status (tab. 2.).

The content of magnesium presented a downward trend, constant and continuous until the 4th month, the maximum was recorded in the 1st month, 2.74 mg/dL and the minimum of 84 mg/dL in the 3rd month.

The cunicul youth had phosphorus content in the 2nd month of 4.3 mg/dL, followed immediately on the scale value by 6.8 mg/dL in the 1st month, the maximum being reached in the 4th month, 7.2 mg/dL.

CONCLUSIONS

1. We consider that this study, through the data that it provides, may constitute a scientific argument for changes and modifications assessment caused by aggressors and aggressions, the rabbits being used in medicine to test experimental drugs, vaccines, toxins, stressors, pathogenic etiologic agents and nutrients.

2. The results of the biochemical blood examination in young cunicul until 4 months are needed to organize reference data, because in the specialized international literature the biochemical parameters vary between large limits.

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