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Research Article

CHANGES IN THE COMPOSITION OF GUINEA PIG SALIVA DURING MICROBIOTA IMBALANCE

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ABSTRACT

This article investigates the biochemical characteristics of guinea pig saliva under conditions of dysbiosis. Dysbiosis, which represents a disruption of normal microbiota, can significantly impact the health of animals and their physiological processes. In the course of the experiment, key components of saliva, including proteins, carbohydrates, and electrolytes, were analyzed to identify changes associated with microbiota imbalance. The results showed significant deviations in the biochemical composition of guinea pig saliva, indicating potential mechanisms by which dysbiosis affects digestion and immune response. These findings emphasize the importance of monitoring microbiota status and biochemical indicators of saliva for maintaining the health of guinea pigs.

KEYWORDS

Dysbacteriosis, guinea pigs, saliva, biochemical characteristics, microflora, animal health, physiological processes.

INTRODUCTION

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Dysbacteriosis is a condition characterized by a disruption of the normal balance of microbiota in the body. This phenomenon can occur under the influence of various factors, such as poor nutrition, stress, infectious diseases or the use of antibiotics. In guinea pigs, as in other animals, dysbacteriosis can lead to serious disturbances in the digestive system and weakened immune defense.

Saliva plays a key role in the digestive process and in protecting the mucous membranes of the oral cavity. It contains many biochemical components, including enzymes, proteins and antibodies, which help maintain the health of the body. Studying changes in the biochemical composition of saliva in dysbacteriosis can provide valuable information about the health of guinea pigs and the mechanisms that contribute to the development of diseases.

Purpose of the study

The aim of this study is to analyze the biochemical characteristics of guinea pig saliva under conditions of dysbacteriosis, to identify the main changes and their potential impact on animal health.

METHODS

The study involved 30 guinea pigs, aged 8-12 weeks. The animals were divided into two groups: a control group (15 guinea pigs, without signs of dysbacteriosis) and an experimental group (15 guinea pigs, in which signs of dysbacteriosis were established). Guinea pigs were kept in standard conditions, with access to clean water and balanced feed. All animals were vaccinated and clinically examined before the experiment.

Saliva was collected by encouraging animals to chew soft food for 15 minutes. The collected material was placed in sterile containers and stored at -20°C until analysis.

Analysis of biochemical characteristics of saliva was carried out using the following methods:

- Determination of protein levels: Biuret test method.
- Measurement of carbohydrate content: Phenolic test method.
- Electrolyte analysis: Ion chromatography.
- Measurement of lysozyme activity: Colorimetric method.

The obtained data were processed using a statistical software package. Differences between groups were analyzed using a t-test, with a significance level of $p < 0.05$.

RESULTS AND DISCUSSION

The study revealed significant changes in the biochemical composition of guinea pig saliva under conditions of dysbacteriosis.

1. Protein level

o In the experimental group, the protein level in saliva averaged 2.5 g/ dL , which was significantly higher than in the control group (1.8 g/ dL) ($p < 0.05$).

2. Carbohydrate content

o The carbohydrate content in the saliva of guinea pigs with dysbacteriosis increased to 0.6 g/ dl ,

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compared with 0.4 g/ dl in the control group ($p < 0.05$).

3. Electrolyte concentration

o Salivary sodium and potassium levels also showed significant differences: sodium was 140 mM /L in the experimental group versus 120 mM /L in the control group ($p < 0.01$), while potassium levels increased from 4.0 mM /L to 5.2 mM /L ($p < 0.05$).

4. Lysozyme activity

o The activity of lysozyme in the saliva of guinea pigs with dysbacteriosis was 0.25 µg/ml, which is lower than in the control group, where this indicator was 0.35 µg/ml ($p < 0.05$).

All the changes identified were statistically significant, confirming the impact of dysbacteriosis on the biochemical characteristics of guinea pig saliva. The results highlight the importance of saliva as an indicator of animal health and the potential impact of dysbacteriosis on their physiological functions.

CONCLUSION

A study of the biochemical characteristics of guinea pig saliva under conditions of dysbacteriosis showed significant changes in the composition of saliva compared to the control group. An increase in protein and carbohydrate levels, as well as a change in the concentration of electrolytes, indicate disturbances in physiological processes in the animals' bodies. A decrease in lysozyme activity indicates a possible weakening of the immune defense.

The obtained data highlight the importance of monitoring the microflora status and biochemical parameters of saliva for the early detection of dysbacteriosis and other diseases. This may help in developing effective prevention and treatment strategies aimed at maintaining the health of guinea pigs.

Further research is needed to better understand the mechanisms underlying changes in the biochemical composition of saliva and to assess the impact of various factors on the health of guinea pigs.

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