



DIAGNOSTIC VALUE OF AMINO ACID COMPOSITION OF BLOOD IN CHILDREN WITH EROSION OF DENTAL TISSUES

Akhmedov A. B.

Tashkent State Dental Institute

Abstract:

The exchange of amino acids occupies a significant place in the metabolism of substances in the body. This article elucidates diagnostic significance of amino acid composition of blood in children with erosion of dental tissues.

Key words:

Amino acids, metabolism, organic acids, somatic diseases, dental tissues, blood serum, neurotransmitters, hormones.

From a chemical point of view, amino acids are organic acids containing one or more amino groups, from a biological point of view, they are the most important nitrogen-containing ones in the body. The exchange of amino acids occupies a significant place in the metabolism of substances in the body, through which the interconnection of carbohydrate, fat and protein metabolism is carried out. Amino acids are precursors of many biologically active substances, hormones, neurotransmitters.¹

There are 20 known amino acids involved in the construction of protein molecules. For the biosynthesis of proteins in our body, which must be renewed all the time, the constant presence of all 20 amino acids included in their composition is necessary. Not all amino acids can be synthesized in the human body itself. Some of them must come from food, such an amino acid, they are called essential amino acids.³

The spectrum of free amino acids in the tissues of the body is highly constant, and its changes indicate significant disturbances in metabolic processes in the body that occur in various human pathologies. The results of clinical and biochemical studies indicate the presence of certain changes in protein metabolism in somatic diseases, in the form of changes in the content of free amino acids in the blood serum.²

Thus, the data on the violation of the spectrum of total amino acid blood serum in patients with somatic, including dental diseases, are contradictory; therefore, there are many unclear questions about changes in amino acid metabolism in children. At the same time, the addition of data on the exchange profile of dental status, clinical, laboratory, and instrumental changes in children is important for assessing the condition of patients, predicting the restoration of damage to hard dental tissues and prescribing adequate therapy.

Material and methods.

Isolation of free amino acids. Precipitation of proteins and peptides of the aqueous extract in centrifuge beakers. For this, 1 ml (exact volume) of 20% TCAA was added to 1 ml of the test sample. After 10 minutes, the precipitate was separated by centrifugation at 8000 vol/min for 15 minutes. Separating 0.1 ml of the sedimentary liquid, it was freeze-dried.

HPLC analysis of FTK-derivatives of amino acids. The synthesis of FTC (phenylthiocarbomail) derivatives of free amino acids was carried out according to the method of Steven A., Cohen Daviel.

The identification of FTC amino acids is carried out on an Agilent Technologies 1200 chromatograph on a 75x4.6 mm Discovery HS C18 column. Solution A: 0.14M CH₃COONa + 0.05% TEA pH 6.4, B: CH₃CN. Flow rate 1.2 ml / min, absorption 269nm. Gradient% B / min: 1-6% / 0-2.5min; 6-30% / 2.51-40min; 30-60% / 40.1-45min; 60-60% / 45.1-50min; 60-0% / 50.1-55min.

Results.

Analysis of the composition of free amino acids in blood serum in children with erosions of hard dental tissues showed significant fluctuations in the concentration of amino acids in some patients. So, in the majority of children, they had deviations in all amino acids, with the exception of leucine - in 11.7%, proline - in 18.2%, and lysine - in 21.7%. The distribution of the amino acid content in children with erosions of dental hard tissues was different from normal, in particular, this is clearly demonstrated by the comparison of the normal and median values.

Thus, the revealed changes in the spectrum of amino acids during erosion of dental hard tissues may indicate the presence of a complex mechanism for the development of dental erosion with the participation of many factors, including amino acids, as well as the need to correct the amino acid composition even at the initial stages of the development of dental hard tissue erosion.

Literature.

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