

# BRANCH CHAIN AMINO ACIDS (BCAA) AS POTENTIAL PHYSIOLOGICALLY ACTIVE SUBSTANCES

Nesterenko T. O.

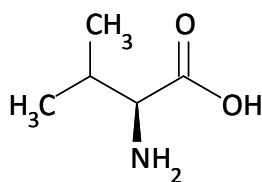
Scientific supervisor: Arzumanov P. S., Ph.D. in Pharmacy, Assistant-professor of  
organic chemistry department

National University of Pharmacy, Kharkiv, Ukraine

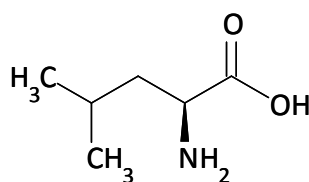
tanyan393@gmail.com

**Introduction.** In recent decades, most attention in the pharmaceutical industry of the drug development is directed on biologically active substances that are involved in the processes of human life. Amino acids, especially essential ones, are of great interest for medicine. Amino acids play important role for athletes as building material for muscles.

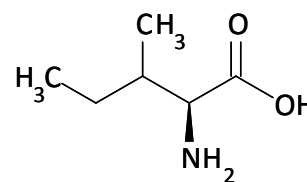
**Materials and methods.** BCAA (branch chain amino acids) – are popular among bodybuilders dietary supplement. BCAA – are three amino acids having a branched structure of the side chain. These substances are not synthesized in our bodies. They are essential. In this case, there are only three: valine + leucine + isoleucine with hydrophobic properties.



Valine



Leucine



Isoleucine

**Results and discussion.** Valine is the source of energy for the muscles, as well as one of the important components of the synthesis of tissue. Isoleucine is required for hemoglobin synthesis, regulation of blood sugar, for leucine metabolism. By hydrophobic residues, an environment, that is necessary for binding oxygen from myoglobin, is created. Athletes, in the period of high muscle load, demand muscle oxygen, that is partly satisfied by oxygen released myoglobin.

Leucine is one of the main sources of energy. Its oxidation provides more ATP than glucose molecule. However, leucine and glucose oxidation differs in a way; the athlete gets just 2 powerful sources of ATP, restoring their strength much faster.

Additional reception BCAA increases the production of insulin and accelerates the transport of glucose and amino acids to the muscles.

It is clinically proven that these substances reinforce the immune system.

**Conclusion.** Modification of chemical structure of BCAA is productive direction for physiologically active substances research not only as food additives, but also as drugs.