

Valine

Valine is a branched-chain aliphatic amino acid. It is classified as an essential amino acid because the human body is unable to synthesize its branched chain. It is found in sufficient quantities in food, so diseases caused by its deficiency hardly occur. Absorption in the intestines is very fast, then in the blood we find the free form in high concentration.

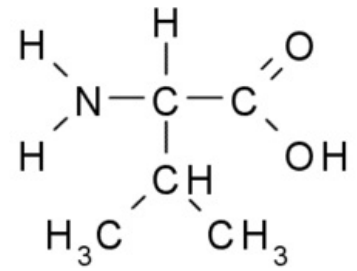
Metabolism

The initial reaction of valine metabolism is transamination, during which the corresponding **α -keto acid** = 2-oxoisovalerate is formed. This is further converted using a multi-enzyme dehydrogenase in the mitochondria. The first reaction using dehydrogenase is analogous to oxidative decarboxylation and produces **thioester acyl-CoA**, the second reaction is then dehydrogenation to form **thioacyl-CoA**.

Further reactions produce acetyl-CoA and propionyl-CoA, which is further converted to **succinyl-CoA**. The presence of cobalamin is necessary for the catabolism of this amino acid. From the products of metabolism, it is clear that valine has **glucogenic** and partially **ketogenic** character.

A total of three isoforms of the aminotransferase enzyme **designated for branched chains** participate in the transamination reaction. These are located either in the cytosol or mitochondria. A high concentration is found in the muscles, including the myocardium, and in a lower concentration, the enzymes are also found in the liver.

However, the liver usually does not participate in the processing of branched amino acids, aminotransferase activity is low in them. Catabolism of valine takes place mainly in muscle and brain.^[1] During starvation, enzyme activity is suppressed to prevent losses.



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Links

Related articles

- Amino acid
- Disorders of the metabolism of aromatic and branched amino acids
- Leucinosi

External link

- Valin (<https://cs.wikipedia.org/wiki/Valin>)

References

- LEDVINA, Miroslav – STOKLASOVÁ, Alena – CERMÁN, Jaroslav. *Biochemistry for medical students : part 1*. 3. edition. Prague : Karolinum, 2011. ISBN 978-80-246-1414-4.