

Lysine

Lysine is classified as an essential amino acid. It contains two amino groups on the α and ϵ -carbons.

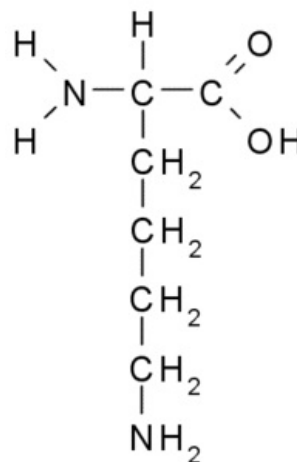
Metabolism of lysine

The first step of transamination requires the presence of α -ketoglutarate as an acceptor. As a product of the reaction, **saccharopin' is formed, which is subsequently broken down into α -aminoadipic acid semialdehyde and glutamate. The semialdehyde of α -aminoadipic acid is then oxidized and transaminated, after several further reactions, acetacetyl-CoA is formed.**

As conjugators with carnitine, medium and long fatty acids are transported into mitochondria for the purpose of β -oxidation. Carnitine is not synthesized directly from lysine, but from lysine residues in other proteins. First, triple methylation of these residues takes place, followed by four more reactions giving rise to carnitine.

Post-translational modification of lysine is carried out by **lysyl hydroxylase'**, i.e. an oxidase with a mixed function (the reaction requires molecular oxygen, ascorbate, Fe^{2+} and α -ketoglutarate). The resulting hydroxylysine can be found mainly in connective tissue.

Congenital defects involving lysine are persistent ``hyperlysinemia *and* ``*hyperlysinuria*. Both are manifested by severe physical and mental disabilities.



Lysine molecule

Links

Related Articles

- Amino Acids

References

- ws:Lyzin
- MATOUŠ, Bohuslav, et al. *Basics of medical chemistry and biochemistry*. 2010. edition. Prague : Galen, 2010. ISBN 978-80-7262-702-8.

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