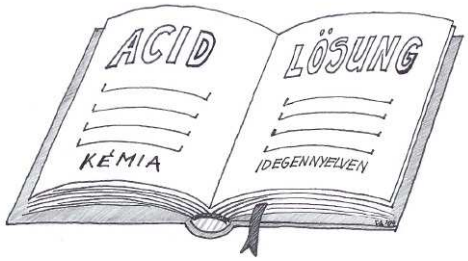
# *KÉMIA IDEGEN NYELVEN*




## *Kémia angolul*
## *Szerkesztő: Sztáray Judit*

**Kedves Diákok!**

Az mostani számban megtalálhatjátok az idei év utolsó fordításra váró angol szakszövegét.

**Sztáray Judit**
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**A fordítást a következő címre küldjétek**:
**KÖKÉL Kémia Idegen nyelven**
**ELTE Kémiai Intézet**
**Sztáray Judit**
**1518 Budapest 112, Pf.: 32**

**Kitűzött fordítási szöveg**

### What are amino acids?

### Structures and names

Amino acids are exactly what they say they are! They are compounds containing an amino group, -$NH_2$, and a carboxylic acid group, -COOH.

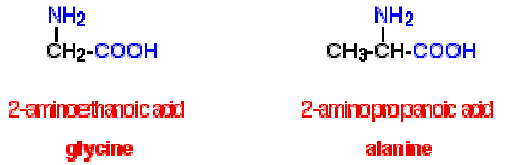


The biologically important amino acids have the amino group attached to the carbon atom next to the -COOH group. They are known as ***2-amino acids***. They are also known (slightly confusingly) as ***alpha-amino acids.***

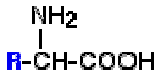
The two simplest of these amino acids are 2-aminoethanoic acid and 2-aminopropanoic acid.

Because of the biological importance of molecules like these, they are normally known by their traditional biochemical names.

2-aminoethanoic acid, for example, is usually called ***glycine***, and 2-aminopropanoic acid is usually known as ***alanine***.

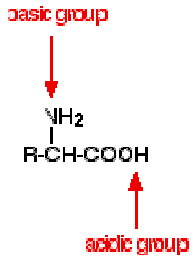



The general formula for a 2-amino acid is:

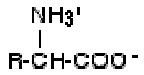



where "R" can be quite a complicated group containing other active groups like -OH, -SH, other amine or carboxylic acid groups, and so on. It is definitely NOT necessarily a simple hydrocarbon group!

If you look again at the general structure of an amino acid, you will see that it has both a basic amine group and an acidic carboxylic acid group.



There is an internal transfer of a hydrogen ion from the -COOH group to the -$NH_2$ group to leave an ion with both a negative charge and a positive charge.




This is called a ***zwitterion***. a zwitterion

This is the form that amino acids exist in even in the solid state. Instead of the weaker hydrogen bonds and other intermolecular forces that you might have expected, you actually have much stronger ionic attractions between one ion and its neighbours.

These ionic attractions take more energy to break and so the amino acids have high melting points for the size of the molecules.

There are about eighty amino acids found in nature, but only twenty to twenty-nine are required for human growth. Eight to ten amino acids are considered essential for life. The reason for the classifications of amino acids into "essential" and "non-essential" was to distinguish between those the body could manufacture and the ones that had to come from diet.

**Essential** amino acids are those that must come from the diet. These include: isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine. Failure to obtain enough of even 1 of the 10 essential amino acids, those that we cannot make, results in degradation of the body's proteins—muscle and so forth—to obtain the one amino acid that is needed. Unlike fat and starch, the human body does not store excess amino acids for later use—the amino acids must be in the food every day.

**Non-essential** amino acids are those that the body can manufacture from an available source of nitrogen and a carbon skeleton. These include: alanine, asparagine, aspartic acid, carnitine, citrulline, cysteine, cystine, GABA, glutamic acid, glutamine, gluthathione, glycine, hydroxyproline, ornithine, proline, serine, taurine, and tyrosine. Tyrosine is produced from phenylalanine, so if the diet is deficient in phenylalanine, tyrosine will be required as well.



**Semi-essential** amino acids are ones that can sometimes be made internally if conditions are right. Arginine and histidine can be converted from other amino acids if needed. Methionine can be converted to cystine, but cystine cannot be converted to methionine. Phenylalanine can be converted to tyrosine, but not the other way around. Therefore, when cystine and tyrosine are present in the diet, the requirements for methionine and phenylalaine are reduced. Thus, cystine and tyrosine are sometimes classified as "semi-essential." The liver is able to produce 80% of the amino acids it needs for protein construction, while the remaining 20% must be consumed.

Source:
http://www.innvista.com/health/nutrition/amino/intro.htm
http://www.biology.arizona.edu/biochemistry/problem_sets/aa/aa.html
http://www.chemguide.co.uk/organicprops/aminoacids/background.html#top