

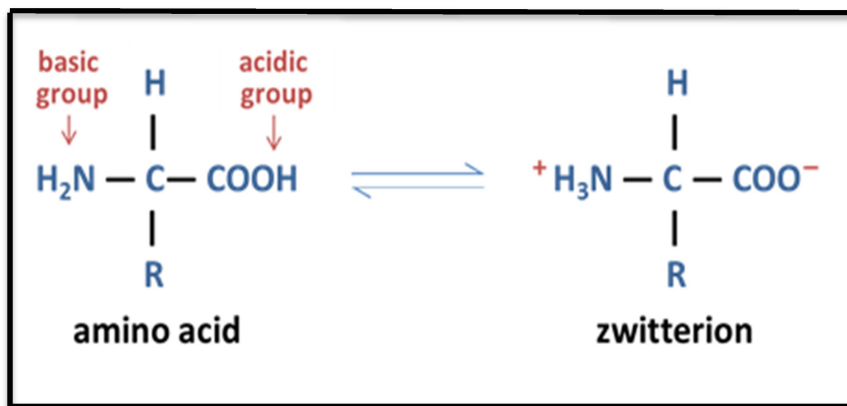
Amino acids

They are organic compounds that have two or more active groups. All amino acids contain an acidic group (carboxyl group COOH) and an alkaline group (amino group NH₂), because of that, amino acids have an amphoteric behavior (weak acid and weak base behavior).

There are 20 amino acids which act as building blocks of protein molecules found in living tissues, including eight (in adult person), the body cannot manufacture them sufficiently, that is why it should be got from food or through medication.

They are crystalline materials, which are different from each other in taste such as:

- 1- Alanine, Serine, Glycine and Proline have sweet test.
- 2- Tryptophan has no test.
- 3- Arginine has bitter test.



All amino acids have high melting point, they are dissolved in polar solvents such as water and ethanol but not dissolved in non-polar solvents such as benzene, hexane and ether. They are optically active because they contain an asymmetric carbon atom except Glycine. Amino acids are always in the form of a Zwitter ion when **pH** equals to **pI**.

(pI) Isoelectric point: It is a certain pH value at which the sum of the negative charges equal to the sum of the positive charges (the molecule carries no net electrical charge).

Qualitative test of protein

Foods High in Protein



Meat and fish



Cheese



Eggs



Beans



Bread



Hummus



Nuts and seeds