

HOW ARE AMINO ACIDS MADE ?

A commonly asked question is "What is the source of the amino acids " Unfortunately there is not a simple answer to this and often Suppliers of amino acids are secretive about details about their manufacturing

Processes:.

The following are the usual methods for production of amino acids:

Fermentation:

The most common method of production of amino acids is via a fermentation process similar to production of beer. In these fermentation processes selected microorganisms (either bacterial cells or yeast cells) are grown in fluid culture in very large vats.

The cells are fed with nutrients such as corn steep liquor. When they grow the microorganisms secrete amino acids into the liquid surrounding them. Particular strains of microorganism are chosen to produce high yields of particular amino acids.

When the culture is mature the cells are removed from the liquid by a settling and filtration process.

The individual amino acids are then purified by a variety of techniques that can include chromatography, crystallisation and filtration.

Enzymes:

Another technique for producing amino acids is the use of enzymes to convert precursors into amino acids. This technique involves incubation of the precursors with the enzyme for a period of time. Following incubation the desired amino acid is separated from any unreacted precursor and the enzyme and purified. The enzyme is recovered and recycled.

Synthesis:

Some amino acids can be produced synthetically. This involves a number of chemical reactions with no involvement of biological material.

Often this will need to be

followed by separation of the L- form from the D-form because the reactions used result in mixtures of D- and L- forms

Extraction:

The other method that has been used is extraction from biological material such as plants or animals. In many cases this also involves enzymatic degradation of protein followed by separation of individual amino acids and then purification.

In the following table I have tried to give the most likely source of the particular amino acid, the precise information is not always available from manufacturers.

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