

The most important techniques for the large-scale synthesis of small peptides are based on solid-phase synthesis. Sometimes, enzymatic synthesis is the technique of choice for the large-scale production of very small peptides, such as the artificial sweetener aspartame. This dipeptide is better known as NutraSweet, which is a registered trademark of G. D. Searle and Company Limited. In 1988, four million kilograms (four thousand metric tons) of aspartame were produced primarily by this technique. It is interesting to note that this is accomplished at the selling price of approximately one hundred dollars per kilogram. Clearly, large-scale production of peptides has become possible. However, the particular method of production may vary depending on the peptide in question.

Recombinant DNA techniques have traditionally found greater use in the large-scale synthesis of polypeptides and proteins. In the last few years dramatic changes have occurred in that new techniques have allowed peptides to be produced in new hosts in a way that was previously not possible. For example, genes coding for bioregulators have been transferred to farm animals which then produce those bioregulators in their milk. Similar experiments are also in progress for plants. Prior to this work, recombinant DNA techniques primarily used bacteria, yeast and other unicellular organisms to produce the polypeptides. These topics are discussed further in section 2.