

2.1 Peptides

The majority of novel toxins and bioregulators are peptides. In spite of their different functions, all peptides are linear polymers of different amino acids. By analogy, peptides are like beads on a string. There are over twenty possible choices for each position. Peptides consist of less than 50 amino acid residues. They differ from many other polymers in having a strictly defined length and sequence of amino acid monomers. These are acquired from their unique mode of biosynthesis. They differ from each other in that each peptide has a unique amino acid sequence. A new peptide is made every time a single amino acid is changed. These changes can dramatically alter the biological activity of the peptide.

Peptides are generally of biological origin, although it is possible to synthesize them chemically so that they have biological activity. Synthesis can confirm the structures of naturally occurring substances, and make them available in greater quantities for further investigations. It can also identify structures to allow preparation of artificial vaccines. Another result of synthesizing peptides is that it allows drugs to be made more potent by replacement of certain amino acids with others.