Solution structure of human atrial natriuretic peptides (7-28)

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Abstract

The natriuretic peptides consist of three families, atrial natriuretic peptide (ANP), brain natriuretic peptide(BNP), and C-type natriuretic peptide (CNP). CNP is observed in the central and peripheral tissues, functioning as an autocrine or paracrine regulator, whereas ANP and BNP are produced by the atrium and ventricle and function as cardiac hormones. Natriuretic peptides have a ring structure by a disulfide bond. Seventeen residues, which show a high sequence homology, are included in the ring structure. Therefore, exocyclic N-terminal and C-terminal residues make differences in natriuretic peptides, which cause different binding affinities for natriuretic peptide receptors.1) Up to now, three dimensional (3D) structures of two different ANP fragments, human ANP(1-28) and rat ANP(7-23), have been determined. A disulfide bond is formed between Cys7 and Cys23. Human ANP(1-28) and rat ANP(7-23) differ in their 12thresidues (human, Met; rat, Ile). Authors determined 3D structure of the other human ANP fragment, which consists of Cys7-Tyr28, using nuclear magnetic resonance spectroscopy.

Reference

1. M. Mimeault, A. Lean, M. Lafleur, D. Bonenfant and A.Fournier, Evaluation of conformational and binding characteristics of various natriuretic peptides and related analogs. (1995), Biochemistry, 34, 955-964.