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Tenecin 3 : A antifungal active protein with random coil conformation

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The conformation studies of tenecin 3, which has been purified from the hemolymph of the meal worms *Tenebrio molitor*, was carried out by CD and NMR. This highly Gly-rich protein consisting of 78 amino acid residues shows similar biochemical features such as heat stability, humoral existence, and high contents of Gly and His residues to other insect antifungal proteins. CD results showed that the random structural propensity of protein is not affected by temperature, pH, and the presence of organic solvent or SDS micelle. The small dispersion of amide protons and absence of NH-NH cross peaks in 2D NOESY spectrum indicate that tenecin 3 is mainly composed of random coil. This results suggest that tenecin 3 exists as random coil conformation in aqueous solution. The target site of tenecin 3 has yet to be known. Since recently the fair affinity of tenecin 3 to cell walls of fungi was found, the CD spectrum were measured in the presence of various cell wall constituents of fungi. Any conformational change was not induced by them. Tenecin 3 exists as random coil, but this conformational property may play a important role in efficient response to invading pathogen. The target region of fungi and the conformation in the action state must be studied to understand the molecular mechanism of tenecin 3, antifungal weapon of insect.