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Poster 2

NMR Structural Characterization of a Synthetic Pulmonary Surfactant Peptides Derived from Human SP-B Protein in TFE Solution and DPC Micelle

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Pulmonary surfactant, lowering alveolar surface tension, is essential for prevention of alveolar collapse at the end expiration. The pulmonary surfactant is composed of 90-95% phospholipid, mainly dipalmitoyl-phosphatidylcholine(DPPC), phosphatidylglycerol(PG), and 5-10% surfactant protein. The truncated peptides (SP-B(3,4)) derived from human SP-B protein, when appropriately recombined with phospholipid, restored the surface tension lowering activity measured by Wilhemly plate method. In order to investigate the structures of SP-B(3,4), circular dichroism (CD) and NMR experiments were performed. The tertiary structures of SP-B(3,4) show that they have α -helical structure from Pro4 to Arg13 in trifluoroethanol (TFE)-containing aqueous solution and from Gln5 to Leu13 in dodecylphosphocoline (DPC) micelle. SP-(3) has bent structure at the C-Terminus. This may cause SP-(3) to have better surface tension-lowering activity than SP-B(4).