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Molecular Level Interaction of Human Fibroblast Growth Factor-1 (hFGF-1) with Anti-Diabetic Drug HITESH WAGHWANI, RAMMOHAN PARIPELLY, Western Kentucky University — Fibroblast growth factors work as modulators of different cell activities like mitosis, differentiation, survival etc. Within the FGF family FGF-1 is the potent angiogenic factor, involved in the formation of new blood vessels in tissues. FGF-1 is one of the targets in cancer inhibition and obesity due to its involvement in blood vessel formation in cancerous regions and adipose tissues. Many studies are going on inhibiting the FGF-1 mediated angiogenesis as FGF-1 plays a crucial role in angiogenesis. FGF-1 binds with heparin and this complex further binds to Fibroblast growth receptors. Heparin potentiates the mitogenic activity and increases the functional half life of the FGF-1. Phloridzin, an anti-diabetic drug, functions on the membrane surface of nephrons by preventing glucose re-absorption. Phloridzin resembles heparin in its structure as it is a glycosidic compound. This study is designed to study possible interaction of FGF-1 with Phlordzin. Human FGF-1 was expressed and purified. Preliminary experiments involving FGF-1 and phloridzin were carried out including fluorescence and trypsin digestion where the phloridzin protected the FGF-1 protein from denaturation by temperature and lysis by trypsin respectively. Protein-NMR studies have established the site of ligand binding. In future, isothermal titration calorimetry will be performed to determine the enthalpy of this ligand-protein interaction.

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