

# RHEOLOGICAL BEHAVIOR OF PITAHAYA MUCILAGE AQUEOUS SOLUTIONS

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Pitahaya (*Hylocereus* spp.) cactus plant is native of South and Central America. The fruit of this cactus known as pitahaya or dragon fruit has polysaccharides in their mesocarp that are responsible for the viscosity. Hence, the linear and non-linear rheological behaviors of pitahaya plant mucilage aqueous solutions in the semi-dilute regime as a function concentration and temperature is reported in this work. The mucilage was extracted from young cactus of pitahaya plants using a technology based water/ethanol extraction. Rheological experiments were performed in a TA Instruments ARG2 rotational stress controlled rheometer, using a cone-and-plate geometry of 2° and 60 mm in diameter and texturized parallel plate geometry of 40 mm in diameter. Measurements temperatures were carried out at 25, 40, 50 and 60 °C. Oscillatory measurements show that the elastic modulus ( $G'$ ) increases as mucilage increases and the crossover frequency ( $\omega_c$ ) shifts to higher frequencies. At high mucilage concentrations a gel like behavior is observed where the storage modulus remains constant for all the frequencies studied, and it was not possible to detect ( $\omega_c$ ). The shear viscosity was found to increase with the mucilage content and a shear thinning behavior is observed for all the shear rates studied.