

56. Ultrasonic Absorption & Thermo acoustic Study of Some Polar Bio-liquid mixtures

N. R. Pawar , O. P. Chimankar, V. D. Bhandakkar

ABSTRACT

Cinnamon capsules are sold as food supplements or as dietetic foods to reduce blood sugar levels in type II Diabetes mellitus. About 40% of methanol is converted to formaldehyde which is used for production of plastics, plywood, paints, explosives and permanent press textiles. Methanol is used as a fuel in vehicle. Recent research documents anti-cancer activity of cinnamaldehyde observed in cell culture and animal models of the disease.

Ultrasonic absorption has been measured at different frequencies 1 MHz to 10 MHz in the bio-liquid mixtures of methanol with cinnamaldehyde over the entire range of composition at five different temperatures 293 K, 298 K, 303 K, 308 K and 313 K. The ultrasonic velocity (u), density (ρ) and viscosity (η) has been measured in the bio-liquid mixtures of methanol with cinnamaldehyde. Derived thermo-acoustic parameters acoustic impedance (Z), Vander Waal's constant (b), free volume (V_f), adiabatic compressibility (β_a), internal pressure (π_i), and free length (L_f) has been calculated. The result has been used to discuss the nature and strength of intermolecular interactions in the system. The linear and nonlinear behavior of these parameters can be used to deduce information about the liquid systems. These variations depend on structural changes due to intermolecular interactions in short regions around the molecules.