

CHEMISTRY

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Volumetric, viscometric and thermodynamic studies of (hydroxyproline + aqueous glucose) and (hydroxyproline + aqueous Sucrose) solutions in the temperature range (298.15 to 323.15) K

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Abstract:

Volumetric and viscometric properties of Hydroxyproline ($0.1 \sim 2.1$) mol.L⁻¹ in water, aqueous glucose and aqueous sucrose were calculated within the phytemperature range of (298.15-323.15) K at 5 K interval to describe the solution behavior. Apparent molar volume which is acquired by density data is found increasing with increasing concentration of Hydroxyproline describes the solute-solute interaction occurs in the solution mixture. Besides transfer apparent molar volume, apparent molar volume at infinite dilution, S_v and apparent molar expansivity were also found from derivative values. All of the experimented systems show almost linear increase in case of viscosity. Viscosity data were used to derive viscosity co-efficient (A, B), dB/dT and various thermodynamic parameters. This research shows there is a strong solute-solute and solute-solvent interactions among the chemicals. Various thermodynamic parameters were also evaluated from the viscosity value to determine the spontaneity.

Keywords: Hydroxyproline, Apparent Molar Volume, Thermodynamic Parameters, Viscosity Co-efficient