

Influence of Cationic Surfactant (TTAB) on the Rate of Dipeptide (Gly-DL-Asp) Ninhydrin Reaction in Absence and Presence of Organic Solvents

Authors : Mohd. Akram, A. A. M. Saeed

Abstract : Surfactants are widely used in our daily life either directly in household and personal care products or indirectly in the industrial processes. The kinetics of the interaction of glycyl-DL-aspartic acid (Gly-DL-Asp) with ninhydrin has been investigated spectrophotometrically in aqueous and organic-solvent media in the absence and presence of cationic surfactant of tetradecyltrimethylammonium bromide (TTAB). The study was carried out under different experimental conditions. The first and fractional order-rate were observed for [Gly-DL-Asp] and [ninhydrin], respectively. The reaction was enhanced about four-fold by TTAB micelles. The effect of organic solvents was studied at a constant concentration of TTAB and showed an increase in the absorbance as well as the rate constant for the formation of product (Ruhemann's purple). The results obtained in micellar media are treated quantitatively in terms of pseudo-phase and Piskiewicz cooperativity models. The Arrhenius and Eyring equations are valid for the reaction over the range of temperatures used and different activation parameters (E_a , ΔH^\ddagger , ΔS^\ddagger , and ΔG^\ddagger) have been evaluated.

Keywords : glycyl-DL-aspartic acid, ninhydrin, organic solvents, TTAB

Conference Title : ICCIS 2015 : International Conference on Chemical Industry and Science

Conference Location : Jeddah, Saudi Arabia

Conference Dates : January 26-27, 2015