

Study of the Thermodynamic Properties and Protonation Constants of Glycyl-Asparagine in Different Aqueous Solutions of Methanol at Different Temperatures

Niloofer Soltani AHMADI¹, Farhoush KIANI^{2,*}, Ahmad SHAHIDI¹ & Azadeh G. Hasan SARAEI¹

¹ *Department of Food Science and Technology, College of Agriculture and Food Science, Ayatollah Amoli Branch, Islamic Azad University, Amol, Iran*

² *Department of Chemistry, Faculty of Science, Ayatollah Amoli Branch, Islamic Azad University, Amol, Iran*

SUMMARY. In this research work, the equilibrium constant for protonation processes of glycyl-asparagine in aqueous solution, the values K1, and K2 were determined at T = 298.15, 303.15, 308.15, 313.15, and 318.15 K and constant ionic strength (0.1 mol/dm³ NaCl). Using these K1 and K2, the thermodynamic properties (changes of enthalpy, ΔH , changes of entropy, ΔS , and changes of Gibbs free energy, ΔG) were calculated for glycyl-asparagine in aqueous solution. The values of K1, and K2 were determined using the spectrophotometric and potentiometric methods.

RESUMEN. En este trabajo de investigación, la constante de equilibrio para los procesos de protonación de glicil-asparagina en solución acuosa, los valores K1 y K2 se determinaron a T = 298.15, 303.15, 308.15, 313.15 y 318.15 K y fuerza iónica constante (0.1 mol/dm³ NaCl). Usando estos valores de K1 y K2, se calcularon las propiedades termodinámicas (cambios de entalpía, ΔH , cambios de entropía, ΔS y cambios de energía libre de Gibbs, ΔG) para la glicil-asparagina en solución acuosa. Los valores de K1 y K2 se determinaron mediante métodos espectrofotométrico y potenciométrico.

KEY WORDS: glycyl-asparagine, potentiometric, protonation constants, spectrophotometric.

* Author to whom correspondence should be addressed. E-mail: Farhoush_kiani@yahoo.com