ABSTRACT

Salicylamide pH-rate Profile in Acidic pH

Salicylamide is a nonsteroidal anti-inflammatory drug (NSAID) with analgesic and antipyretic properties. Salicylamide has the characteristics as a weak acid with pKa 8.1. As a weak acid, the increasing pH also increasing the ionization characteristic. The greater amount of the ionized phase makes it more chemically reactive. Salicylamide in buffer solution concentration 0.02 M and ionic strength 0.2 was made in various pH (2.0; 3.0; 4.0; 5.0; 6.0 ± 0.05) then incubated in temperature 40 ± 0.5 °C within six hours. Salicylamide solution sampled in 5 different times (0, 1h, 2h, 4h, and 6h) then analyzed using thin layer chromatography (TLC) method to determine its concentration. The TLC method using dichloromethane:acetone (4:1) as the mobile phase, TLC silica gel 60 F\textsubscript{254} plate as the stationary phase, and Shimadzu CS-930 densitometer. The reaction rate (k) of salicylamide in various pH determined with 3 replications. The result showed that salicylamide follows first order reaction. The value of k in pH 2.0; 3.0; 4.0; 5.0; 6.0 respectively 4.57x10\textsuperscript{-2} ± 3.52 x10\textsuperscript{-2}; 2.61x10\textsuperscript{-2} ± 1.73x10\textsuperscript{-2}; 3.78x10\textsuperscript{-2} ± 3.14x10\textsuperscript{-2}; 3.47x10\textsuperscript{-2} ± 3.38x10\textsuperscript{-2}; 1.50x10\textsuperscript{-2} ± 3.36x10\textsuperscript{-3} jam\textsuperscript{-1}. There was no significant difference of k value between pH groups statistically. From a plot of pH versus log k, salicylamide pH-rate profile is obtained.

Keywords: Salicylamide, pH-rate profile, Thin Layer Chromatography, stability, pH effect