A QUANTITATIVE ANALYSIS OF ASCORBIC ACID IN VITAMIN C RELATED PRODUCTS BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

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JANUARY 2014

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ABSTRACT

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Antioxidant has gained interest among consumers and the scientific community regarding its significances in daily life. In this research, quantitative analysis of ascorbic acid in vitamin C related products by using High Performance Liquid Chromatography (HPLC) had been studied. The simple method with isocratic HPLC system had been developed for rapid determination of amount of ascorbic acid in vitamin C related products. A reversed phase High Performance Liquid Chromatography system with stationary phase of Phenomenex C_{18} column (250 x 4.6 mm) was used for the separation at ambient temperature with 0.1% phosphoric acid as the mobile phase. The system was analyzed at the flow rate of 0.5 ml min^{-1} at wavelengths of 245 nm and 270 nm with ultraviolet (UV) detector. Successful extraction of ascorbic in samples had been achieved and ascorbic acid was eluted at retention time between 8 minutes to 10 minutes. Both tablets were well separated and the peak was resolved completely. The amount of ascorbic acid for both samples almost similar to the one stated at the label of the bottle which was 1000 mg per tablet. For tablet P, the amount of ascorbic acid was 1021.50 mg for wavelength 245 nm and 990.00 mg for wavelength 270 nm. As for tablet K, the amount of ascorbic acid was 1125.82 mg for wavelength 245 nm and 1113.60 mg for wavelength 270 nm. The stability test had also been done by storing the samples to four storage conditions. The results showed that amount of ascorbic acid were stable for both samples after being stored for six hours. The optimized method was further validated according to The International Conference on the Harmonization of the Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) guidelines. The method showed good system suitability, linearity ($r^2 > 0.99$), recovery (> 20%), precision (percentage of Relative standard deviation, %RSD) and sensitivity (limit of detection and limit of quantification), indicating that the proposed method could be used for quantitative analysis of ascorbic acid in vitamin C related products.