



DEVELOPMENT OF A HPLC METHOD WITH UV DETECTION TO DETERMINE VITAMIN A PALMITATE CONTENT IN MULTIVITAMIN SYRUPS THROUGH THE DIRECT EXTRACTION OF THE ANALYTE

Y.N.A. De Silva, T. Perera

Department of Chemistry, University of Sri Jayewardenepura, Sri Lanka

theshi.sjp@gmail.com

Vitamins are essential for human lives which are required in small quantities. Normally, lack or excess of vitamins can cause health problems as they play a vital role in human metabolism. Among all other vitamins, vitamin A palmitate is important in regulating the immune system, maintaining surface lining of the eyes and helps to prevent the infection in both respiratory and intestinal tracts. Industries always look for several productive analytical methods to be used in quality assurance to ensure the quality of the vitamin products.

A simple reversed phase HPLC method was developed to determine vitamin A palmitate in multivitamin syrup which also contained other active substances. The chromatographic conditions; mobile phase of methanol: water (98:2 v/v), 2 ml/min flow rate in isocratic mode, injection volume of 20 µL, UV detection at the wave length of 325 nm and temperature of 40 °C in the column oven were optimized for the method. As it is very important to be cost effective for industrial purposes, direct extraction of vitamin A palmitate into HPLC grade methanol was achieved by degassing the sample for 18 minutes in the sonicator. The method was compared with the hexane extraction of the sample into HPLC grade methanol to clarify whether degassing had given a high extraction of the analyte. The new method was validated using the guidelines of International Conference on Harmonisation (ICH) of technical requirements for registration of pharmaceuticals for human use. Linearity, limit of detection and precision were checked. Obtained results were statistically analyzed. Under regression analysis, correlation coefficient was 0.999 for the calibration curve. The recovery amount of vitamin A palmitate from the direct extraction method was 407,418.1818 IU / 1000 ml and percentage of recovery amount was 99.4%. The error percentage was 0.63%. Limit of detection on visual based was 0.1 ppb. Recovery amount of vitamin A palmitate from the hexane extraction was 391,636.3636 IU / 1000 ml and percentage of recovery amount was 95.5%.

Keywords: *HPLC, vitamin A palmitate, UV detection, direct extraction, Sonicator*