HPLC DETERMINATION OF VITAMIN C IN COMMERCIAL VITAMIN C TABLETS

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ABSTRACT

DETERMINATION OF VITAMIN C IN COMMERCIAL VITAMIN C TABLETS BY USING HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

In this study, HPLC technique was used for the quantitative determination of vitamin C in vitamin C tablets. The sample was pulverized and diluted to the diluting factor of 100 and 10. The samples were separated using C_{18} reversed-phase high performance liquid chromatography (HPLC) with mobile phase of deionised water and methanol (MeOH) (95:5% (v/v)) and mobile phase system with flow rate of 1.0 mL/min and UV detection at wavelength of 265 nm. Vitamin C peak was observed at retention time of approximately 2.126 minutes with total analysis time at about 3 minutes. The calibration curves were prepared for concentration; 0-200 ppm. The calibration curves shown good linearity as r=0.99965. Among five samples of tablets which was brand A, brand B, brand C, brand D and brand E, brand D was fully fulfilled the requirement which less 5% RSD and percent relative error within 10% of label claimed with 4.39% of RSD and 9.75% of relative error. The method was found to be efficient for the analysis of vitamin C in solid sample as it gave good accuracy excellent precision (low value of percent RSD (2.42%).

CHAPTER 1

INTRODUCTION

1.1 Background and problem statement

Vitamin C supplement is an essential nutrient for human where the presence of ascorbate is required for a range of essential metabolic reactions. It is widely known that a deficiency in this vitamin can cause scurvy in humans. (Lenghor et.al, 2002)

The pharmacore of vitamin C is the ascorbate ion. In living organisms, ascorbate is an antioxidant since it protects the body against oxidative stress and is a cofactor in several vital enzymatic reactions. The uses and recommended daily intake of vitamin C are matters of on-going debate. A recent meta-analysis of 68 reliable antioxidant supplementation experiments involving a total of 232 606 individuals concluded that consuming additional ascorbate from supplements may not be as beneficial as thought. (Bunpeng et.al, 2008)

Vitamin C in supplement is purely the L-enantiomer of ascorbate while the opposite D- enantomer has no physiological significance. Both forms are mirror images of the same molecular structure. When L-ascorbate, which is a strong reducing agent, carries out its reducing function, it is converted to