

**Title:** Analytical proposal for the simultaneous determination of water-soluble vitamins in dietary supplements by SPE HPLC-UV. Method comparison for the determination of vitamin C.

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**Date:** July 2020

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Vitamins are essential nutrients to the human being diet. These molecules cannot be synthesized by the organism and therefore they must be obtained through the diet. Hence, fortified food products and dietary supplements are being in demand by the population. Industries related to the production of these products have noticed the need to obtain accurate measurements of vitamins, especially for vitamin C and the B-group vitamins. This interest is more pronounced in that kind of products with a therapeutic purpose, whose the labelling legislation for contained nutrients is stricter and it must provide more accurate results. This is the case of the product analysed in this work.

In this work a high-performance liquid chromatography (HPLC) huddled in an ultraviolet (UV) detector is proposed but not experimentally proved, in order to determine simultaneously the water-soluble vitamins contained in a product elaborated by Clinical Nutrition S.A.U, called NutAvant Plus. Due to the complex matrix of this product, several solid-phase extraction (SPE) trials are posed by changing the elution conditions. Also, validation planning is suggested.

On the other hand, an alternative method, called AA Test Kit, for vitamin C analysis is described and experimentally studied. Measures of vitamin C are made in eight different classes of NutAvant products. Also, it is exposed a comparison of this method with the HPLC method, using recollected data from previous measures. HPLC method can be considered as the reference method, due to the fact that it was previously correctly validated for vitamin C by the company.

The validated parameters are: linearity, sensitivity, precision, trueness and accuracy. Also, the correlation between AA Test Kit method and HPLC method is studied for each product. A Paired test is applied in some products in order to give more reliability to the obtained results.

A rapid test for the analysis of acid ascorbic concentration in food is proved to be able to provide similar results to HPLC method.

**Keywords:** HPLC, AA Test Kit, water-soluble vitamins, validation parameters, NutAvant.