

Simple Ecofriendly Cyclodextrine-Surfactant Modified UHPLC Method for Quantification of Multivitamins in Pharmaceutical and Food Samples

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Abstract : A simple and ecofriendly cyclodextrine-surfactant modified UHPLC (CDS-UPLC) method for rapid and sensitive simultaneous determination of multi water-soluble vitamins such as ascorbic acid, pyridoxine hydrochloride and thiamine hydrochloride in commercial pharmaceuticals and milk samples have been firstly developed. Several chromatographic effective parameters have been changed in a systematic way. Adequate results have been achieved by a mixture of β -cyclodextrine (β -CD) and cationic surfactant under acidic conditions as an eco-friendly isocratic mobile phase at 0.02 mL/min flow rate. The proposed CDS- UHPLC method has been validated for the quantitative determination of multivitamins within 8 min in food and pharmaceutical samples. The method showed excellent linearity for analytes in a wide range of 10-1000 ng/ μ L. The repeatability and reproducibility of data were about 2.14 and 4.69 RSD%, respectively. The limits of detection (LODs) of analytes ranged between 0.86 and 5.6 ng/ μ L with a range of 81.8 -115.8% recoveries in tablets and milk samples. The current first CDS- UHPLC method could have vast applications for the precise analysis of multivitamins in complicated matrices.

Keywords : ecofriendly, cyclodextrine-surfactant, multivitamins, UHPLC

Conference Title : ICACBC 2017 : International Conference on Analytical Chemistry and Bioanalytical Chemistry

Conference Location : Amsterdam, Netherlands

Conference Dates : February 07-08, 2017