Preparation of Cyclodextrin Inclusion Complexes for the Stabilization of Vitamin-C

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Abstract

Vitamin-C is a bioactive material widely used in cosmetic, pharmaceutical and food industries. Vitamin-C has a serious problem that it is easily degraded under the influence of environmental factors such as oxygen, temperature, pH value, metal ions, and ultraviolet radiation.

In this work, Vitamin-C was formulated with 2-hydroxypropyl-β-cyclodextrin (HP-β-CD) for enhancement of Vitamin-C stability and bioavailability using a solvent evaporation method. Vitamin-C/HP-β-CD inclusion complexes were prepared using various solvents of each different dielectric constant such as distilled deionized water(DDI-water), methanol, and ethanol and the effect of solvent characteristics on the Vitamin-C stability was investigated. The pure Vitamin-C and formulated samples were stored in a 50 mM phosphate buffer (pH 7.0) solution at 25°C for 24hr to evaluate their storage stability. The percentage of non-degraded Vitamin-C was periodically monitored by a high performance liquid chromatography (HPLC). Our experimental results revealed that the higher the dielectric constant of solvents, the higher Vitamin-C stability was obtained.

References

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