

Stabilization of Vitamin-C by inclusion complex formation using supercritical CO₂

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Supercritical fluid process is multipurpose technology which can be used in cosmetic and pharmaceutical industry. This process as eco-friendly and non-toxic technique is remarkably suitable to the field of this kind of industries where bio-compatibility is important. The bio-availability of Vitamin-C is decreasing with the lapse of time because it is spontaneously oxidized in the presence of oxygen. Therefore, it is very important to prevent Vitamin-C from being oxidized. In this study, supercritical fluid process was employed as the main technology, and the hydroxypropyl- β -cyclodextrin was employed as a protector for stabilization of Vitamin-C and formed inclusion complex with Vitamin-C. Because supercritical fluid process is free from oxygen and moisture, it is able to prevent Vitamin-C from being degraded in the process of preparation. As a necessary consequence, this is a more effective stabilizing process than existing ones such as a solvent evaporation process, and a spontaneous solvent diffusion process, etc. We carried out the experiment by both a solvent evaporation process and a supercritical fluid process and compared the results. To evaluate the stability of prepared samples, we looked at the degradation of Vitamin-C.