

Effect of Temperature and Feed Solution on Microencapsulation of Quercetin by Spray Drying Technique

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Abstract : Quercetin was encapsulated with whey protein and high methoxyl pectin by spray drying technique. Feed solution, consisting of 0.1875 0.125 and 0.0625 % w/w quercetin, respectively, was prepared and then sprays at outlet temperature of 70, 80 and 90 °C. Quercetin contents either in feed solution or in spray dried powder were determined by HPLC technique. Physicochemical properties such as viscosity and total soluble solid of feed solution as well as moisture content and water activity of spray dried powder were examined. Particle morphology was imaged using scanning electron microscope. The results showed that feed solution has total soluble solid and viscosity in range of 1.73-5.60 °Brix and 2.58-8.15 cP, in that order. After spray drying, the moisture content and water activity value of powder are in range of 0.58-2.72 % and 0.18-0.31, respectively. Quercetin content in dried sample increased along with outlet drying temperature but decreased when total soluble solid increased. It was shown that particles are likely to shrivel when spray drying at high temperature. The suggested conditions for encapsulation of quercetin are feed solution with 0.0625 % (w/w) quercetin and spray drying at drying outlet temperature of 90°C.

Keywords : drying temperature, particle morphology, spray drying, quercetin

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