

## Microencapsulation of methyl salicylate by beta-cyclodextrin powder

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This study aims to develop encapsulation methods of methyl salicylate (MS) with crystalline and amorphous beta-cyclodextrin (?-CD). Amorphous ?-CD was produced by spray drying method and had lower moisture content than the crystalline ?-CD. The encapsulation was conducted by three different methods, namely direct mixing, paste and co-precipitation methods. Ethanol was used as a solvent to facilitate the penetration of hydrophobic compound to the cavity. The direct mixing method was followed by addition of absolute ethanol in ratios 1:1, 1:2, 1:3 and 1:4 (v/v) of MS:ethanol. The paste method was also followed by adding absolute ethanol in ratios 140:0, 100:40 and 0:140 (v/v) of water:ethanol. Characterisation of MS/?-CD inclusion complexes was determined by moisture content, entrapment efficiency (EE) using UV-Vis spectrophotometry, surface oil content using Gas Chromatography-Mass Spectrometry (GC-MS) and crystallinity using X-Ray Diffractometry (XRD). The results showed that the addition ethanol in direct mixing method and paste method could increase the entrapment of MS in the inclusion complexes. Furthermore, the XRD results indicated that adding water and ethanol into the amorphous inclusion complex of MS/?-CD transformed the inclusion complex into crystalline form.