Characteristics of indomethacin-saccharin (IMC-SAC) co-crystal prepared by anti-solvent crystallization method

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A creation of co-crystals has been investigated intensively for insoluble drug substances as a promising approach to improve their pharmaceutical performance. In this study, co-crystal powders of indomethacin (IMC) and saccharin (SAC) were prepared by anti-solvent addition. Among several solvents examined in this study, methanol turned out to be the only one that led to a significant co-crystal formation. It was interpreted as the effect of supersaturation combined with relative solubility between co-crystal components.

X-ray diffraction (XRD) and differential scanning calorimetry (DSC) were performed to characterize the off-line physicochemical properties of co-crystal powders. We found out that methanol uniquely worked for both methods. IMC-SAC co-crystal powders of high purity were prepared. In addition, the IMC-SAC co-crystals by anti-solvent crystallization were superior to those from evaporation in terms of the dissolution behavior as well as flowability. Also, this mechanism can be explained by the difference in the solubility of constituting substances.