ABSTRACT

Comparison of Characteristics and Dissolution of Cyclodextrin-Drug Inclusion Complex Made by Solvent Evaporation and Co-Grinding Methods
Literature Review

Luh Putu Ariyani Pratiwi

This research is a literature review that discusses a technique to increase the solubility of drug compounds through the formation of inclusion complex with cyclodextrin as a complexing agent. The type of cyclodextrin that is often used in drug development is βCD and HPβCD. According to the published article, the guest molecules are Cabergoline (CAB), Etoposide (EPS), Luteolin (LUT), Bisacodyl (BSD), Olmesartan (OLM), Telmisartan (TLM), and Tosufloxacin Tosylate (TFLX). This review aims to compare physicochemical characteristic and dissolution of the inclusion complex of drug-cyclodextrin compounds with solvent evaporation and co-grinding methods. Based on the analysis results, the inclusion complex with the evaporation and co-grinding methods showed changes in physicochemical characteristics and dissolution rates better than the drug compounds. However, the evaporation method gives a higher increase in the dissolved percentage. The evaporation method is more prospective when applied to a large scale because the inclusion complex particles formed are thermodynamically stable, while the co-grinding inclusion complex tends to agglomerate.The mixing and solution stirring of the complex components at a specific temperature, duration, and speed with the solvent evaporation method aids the inclusion of guest molecules into the host molecular cavity during the co-grinding process possesses mechanochemical activation.

Keywords: Inclusion complex, dissolution, cyclodextrin, characterization, solvent evaporation, co-grinding