A Study on the Production of High-Quality Carbamazepine-Saccharin Co-Crystals: The Role of Seeding Conditions

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Abstract

Seeding involves introducing a pre- formed Carbamazepine-Saccharin (CBZ-SAC) co-crystal into a solution, influenced by seeding temperature, seed size and seed loading. The primary objective of this research is to explore the effects of seeding temperature, seed size and seed loading on the production of CBZ-SAC co-crystals. The seeding experiment was done by adding seed crystal at targeted seeding temperature during the second cooling phase. The experiment was repeated with different seeding temperatures of 20 °C, 25 °C, 30 °C, 35 °C and 40 °C; seed size of <90, 106-125, 125-160 and 160-180 µm; and seed loading of 31.85, 63.70, 95.55 and 127.4 mg. The study reveals that higher seeding temperature and larger crystal size decrease crystal nucleation rate, while higher seed loading increases it. The optimal seeding temperature between 25 °C to 30 °C, with the ideal seed size being 125-160 µm and seed loading is 63.7 mg. In conclusion, the research highlights the critical role of seeding temperature, seed size, and seed loading in the production of CBZ-SAC co-crystals. Additional research focusing on commercialization could involve ADME analysis or solubility test of the co-crystal produced for deeper understanding on the economic advantages associated with CBZ-SAC co-crystal. ©2025 National Information and Documentation Center (NIDOC)

Author keywords

Carbamazepine-Saccharin; Co-Crystal; Seed Loading; Seed Size; Seeding; Seeding Temperature

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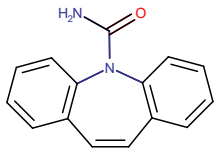

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