

2nd International Conference and Exhibition on

Pharmaceutics and Advanced Drug Delivery Systems

July 05-06, 2019 | Paris, France

A comparative study of co-processed natural disintegrants with the commonly used disintegrants

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The present research work deals with preparing spray dried co-processed natural disintegrant which has an excellent disintegration efficiency. Based on the preprimary trial results, chitin and corn starch were selected as an excipients to be co-processed and range of the processing parameters for spray drying were optimized. 3² Full factorial design was applied, where ratio of chitin:corn starch (X1) & In-let air temperature (X2) were selected as independent factors. Here wetting time, water absorption ratio and In-vitro disintegration were selected as dependent response variables. Comparative evaluation of the optimized co-processed natural disintegrant, Sodium starch glycolate (SSG) and Cross carmellose sodium (CCS) were carried out by formulating tablets with the propranolol hydrochloride and Ibuprofen. Lowest In-vitro disintegration time, wetting time and water absorption ratio for the Lactose monohydrate and D- Mannitol tablets were 29 sec, 30 sec, 75.12% and 31 sec, 28 sec, 80.07%. Almost similar results were obtained in the tablets with Lactose monohydrate and D-Mannitol as a diluent. Optimized batch having Chitin:corn starch in a 50:50 ratio when spray dried at In-let air temperature of 180 °C, provides co-processed natural disintegrant having excellent disintegration efficiency. All the evaluation parameters of the optimized

batch met the acceptance criteria. In-vitro disintegration time of formulated propranolol hydrochloride tablets with optimized co-processed natural disintegrant, SSG and CCS were 31 sec, 58 sec & 52 sec respectively. In-vitro disintegration time of formulated Ibuprofen tablets with optimized co-processed natural disintegrant, SSG and CCS were 25 sec, 33 sec & 30 sec respectively. Stability data of all tablets shows no significant change during stability period & they were in an acceptable range. It was found to have versatile disintegration efficiency without being affected by the type of diluent used and without being affected by the class/dose of active pharmaceutical ingredient to be used with. Order of the disintegration efficiency was Co-processed natural disintegrant > CCS > SSG.

Speaker Biography

Jaydeep Patel has completed his PhD at the age of 29 from Hemchandracharya North Gujarat University, India. He is working as Class-II Senior Lecturer at B K Mody Government Pharmacy College, India. affiliated with Gujarat Technological University, India. He has more than 10 years of teaching and research experience. His area of research is preformulation and novel drug delivery system. He has published and presented various research papers in many National and International conferences.

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