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Effect of processing methods on xylitol-starch base co-processed adjuvant for orally disintegrating tablet application
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Abstract

Orally disintegrating tablet (ODT) is a friendly dosage form that requires no access to water and serves as a solution to non-compliance. There are many co-processed adjuvants available in the market. However, there is no single product possesses all the ideal characteristics such as good compressibility, fast disintegration and good palatability for ODT application. The aim of this research was to produce a xylitol-starch base co-processed adjuvant which is suitable for ODT application. Two processing methods namely wet granulation and freeze drying were used to compare the characteristics of co-processed adjuvant comprising of xylitol, starch and crospovidone XL-10 mixed at various ratios. The co-processed excipients were compressed into ODT and physically characterized for powder flow, particle size, hardness, thickness, weight, friability, in-vitro disintegration time and in-situ disintegration time, lubricant sensitivity, dilution potential, Fourier transform infrared spectroscopy, scanning electronic microscopy and x-ray diffraction analysis. Formulation F6 was selected as the optimum formulation due to the fastest in-vitro (135.33 ± 11.52 s) and in-situ disintegration time (88.67 ± 13.56 s) among all the formulations ($p < 0.05$). Increase in starch component decreases disintegration time of ODT. The powder flow fell under the category of fair flow. Generally, it was observed that freeze drying method produced smaller particle size granules compared to wet granulation method. ODT produced from freeze drying method had shorter disintegration time compared to ODT from wet granulation batch. In conclusion, a novel co-processed excipient comprised of xylitol, starch and crospovidone XL-10, produced using freeze drying method with fast disintegration time, good compressibility and palatability was developed and characterized. The co-processed excipient is suitable for ODT application. © 2020 Pakistan Journal of Pharmaceutical Sciences. All rights reserved.

Author Keywords

Co-processed adjuvant; Crospovidone; Freeze drying; Starch; Xylitol

Index Keywords

adjuvant, crospovidone, starch, xylitol, starch, xylitol; angle of repose, Article, controlled study, drug dosage form comparison, drug formulation, drug granulation, excipient compatibility, Fourier transform infrared spectroscopy, freeze drying, palatability, particle size, powder flow, scanning electron microscopy, tablet, tablet compression, tablet disintegration, tablet disintegration time, tablet friability, tablet hardness, tablet thickness, tablet weight, tensile strength, X ray diffraction, hardness, medicinal chemistry, oral drug administration, particle size, procedures, solubility, synthesis, tablet; Administration, Oral, Chemistry, Pharmaceutical, Freeze Drying, Hardness, Particle Size, Solubility, Starch, Tablets, Xylitol

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