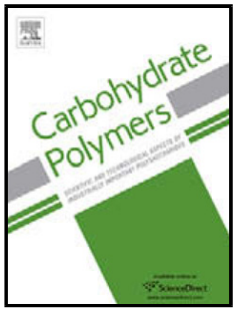

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Physicochemical and powder characteristics of various citrus pectins and their application for oral pharmaceutical tablets

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Highlights

- -Physicochemical, powder and swelling properties of citrus pectins are studied
- -Different properties of pectins will affect tablet property and drug release
- -Various citrus pectins can be applied for oral pharmaceutical tablets

Abstract

The physicochemical and powder properties of citrus pectins varying in molecular weight and degree of esterification (DE) were characterized. All the pectins were flake particles with average sizes of around 84-107 µm in diameter. They were amorphous solids and classified as being from slightly to moderately hygroscopic. Pomelo pectin possessed passable to poor flowability while the others were classified as having fair flowability. Heckel's analysis indicated that all pectins underwent plastic deformation under compression. Pectin with a lower %DE and higher molecular weight produced higher tensile strength tablets. The swelling kinetics of all pectins during the first 4 hours demonstrated Fickian diffusion and the gel erosion in distilled water of higher %DE pectin was slower. Pectins, at 10% w/w in theophylline matrix tablets, provided fast drug release while those at 50% w/w, delayed drug release which reached 97-100% within 6-8 h.