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3-in-1 hygroscopic fruit biopolymer in N-(4-hydroxyphenyl)acetamide high-dose tablet formulation

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The high demand for starch in pharmaceutical industries places a tremendous pressure on the few known official sources and propels efforts for the exploration of local sources. On the other hand, is the worry for excipient-drug interactions, excipient-excipient interactions, elevated side effects and cost of production when many different excipients are used in single dosage formulations for their individual functions. The necessity of reducing the number and quantity of excipients is especially important in high-dose formulations owing to the already high drug load. The cutting-edge technology will be in the use of a single plant-based biopolymer-excipient of triple function (a 3-in-1 excipient).

Method: In this study, the characterization of the biopolymer obtained from the unripe fruit of Musa acuminata for use as a triple-functioned excipient in a high-dose formulation was investigated using the active ingredient N-(4-hydroxyphenyl) acetamide. The polymer was extracted from the unripe fruits using the alkaline solution steeping method slightly modified. The physico-mechanical, analytical and drug release properties of the biopolymer/N-(4-hydroxyphenyl)acetamide binary solid system were characterized by scanning electron microscopy, resistance to crush-friability/disintegration time ratio (RCFR:DT), fourier transform infrared spectroscopy, thermal analyses and dissolution.

Results: The modified alkaline solution steeping method of extraction and further characterization produced a unique hygroscopic starch polymer of triple-function (serving as diluent, binder and disintegrant). in N-(4-hydroxyphenyl)acetamide tablet formulation.

Conclusion: Data obtained from the physicochemical, mechanical and drug release studies indicated that Musa acuminata biopolymer concentrations of ≤ 40% w/w are suitable triple-functional excipients in N-(4-hydroxyphenyl)acetamide high-dose tablet formulation.

Biography

Musa Autamashih has his interest and competence in the characterization of natural polymers for use as multifunctional excipients in solid dosage formulations. He has presented pharmaceutical research innovative papers at world international conferences which include; (i), the Pharmaceutical Sciences World Congress, Amsterdam, April 25, 2007, (ii), the American Association of Pharmaceutical Scientists San Diego, California Conference, November 14, 2007 and (iii), the International Conference and Expo on Biopharmaceutics, September 22, 2015 Baltimore, Maryland, USA. Musa is currently on postdoctoral fellowship in pharmaceutics at the School of Pharmacy of the University of the Western Cape in Cape Town being sponsored by the 'The World Academy of Science' (Italy) in conjunction with the 'National Research Foundation' (South Africa). He has a very busy schedule as he is also on part time contract as a senior lecturer in the same institution. Musa is corresponding author to eleven publications in reputed peer-reviewed journals.

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