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## Evaluation of filler/binder properties of modified starches derived from *Plectranthus esculentus* by direct compression in Metronidazole tablets formulations

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This study is aimed at evaluating the tableting properties of modified starches derived from *Plectranthus esculentus* as filler/binder by direct compression using metronidazole as a model drug. Microcrystalline cellulose (MCC PH 101) was used as standard for comparison. Fresh tubers of *P. esculentus* were obtained from Vom area of Plateau state in Nigeria, and starch extracted by wet milling. Three modifications of the starch were made, acid hydrolysis (APS), pregelatinization (PPS), and ethanol dehydrated pregelatinization (PPE). For drug-excipient compatibility studies, analytical technique Fourier Transform Infrared Spectroscopy (FTIR) was used. The drug and each of the excipients (1:1 w/w) were thoroughly mixed and analyzed. Powder and filler/binder properties of these modified starches were evaluated in comparison with microcrystalline cellulose (MCC PH 101). Powder characterization indicates that modified starches of *P. esculentus* have better flow properties because they have lower angle of repose (15.65 – 30.050) and higher flow rates (2.85 – 8.25 g/s) in comparison with MCC PH 101 with an angle of repose of 46.220 and flow rate of 0.80 g/s respectively. The FTIR results revealed no interaction of these excipients with the active drug. APS produced the best metronidazole tablets of better quality in terms crushing strength and friability and also drug-release profile with regards to disintegration and dissolution parameters compared to MCC PH 101 and other two modifications. Acid hydrolysis of *P. esculentus* starch therefore produced an excellent directly compressible filler/binder that can be substituted for MCC PH 101 in conventional tablet formulations.

### Biography

Khalid Garba Mohammed is Assistant Lecturer with Department of Pharmaceutics and Pharmaceutical Technology, Bayero University, Nigeria. His career pursuit spans for more than 3 years post qualification, with experience in both Government and international Non-Governmental organizations from 2012 to date. He worked as hospital and community pharmacist for over 2 years before switching in to academia. He completed his first degree (B.Pharm.) in 2012 from Ahmadu Bello University, Nigeria, and is currently pursuing his M.Sc. in Pharmaceutics with the same university on excipients development for solid dosage forms. He published 3 papers in reputable journals and has attended conferences both nationally and internationally, the recent one is the International Pharmaceutical Federation conference held in Dusseldorf, Germany. He is an Executive member of a number of professional Associations including Nigerian Association of Pharmacists in Academia (NAPA), Pharmaceutical Society of Nigeria (PSN) and Ahmadu Bello University Alumni Association.

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