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Novel approach for the formulation of excipient-less fixed dose combination (FDC) tablets by Hot Melt Extrusion (HME) technology using quality by design approach

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The objectives of the present study were to investigate the properties of HME based tablets containing plain ibuprofen-paracetamol FDC, without a single excipient and to compare it with marketed formulation by applying QbD approach. Paracetamol and ibuprofen were taken at drug/drug mass ratios (5:2). The prepared physical mixtures were extruded using a corotating twin-screw hot melt extrusion. Among the three tested independent variables in DOE, temperature and feeding rate most significantly affected the tensile strength and drug release from the tablet. The melt extruded granules were passed through a 250 μ m sieve. The maximum optimized ratio (85:5.5:100) determined by DOE was chosen for further analysis. DSC, XRD, SEM were carried out to determine physicochemical changes after melt granulation. The granules were characterized for particle size analysis, flow properties, granule strength. Tablets containing 500 mg paracetamol and 200 mg ibuprofen were compressed at 10.0kN compaction force. The tablets were characterized for tablet hardness, friability, disintegration time and dissolution study. All results were found to be within acceptable USP limits. The optimized extruded batch was stable at 400C, 75%RH for a period of 6 months without changing any dissolution rate and remained into amorphous state.

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An analysis of medication utilization among the Filipino elderly

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The elderly encounter health care challenges, thus increasing their likelihood of using potentially inappropriate medications (PIM) and experiencing medication-related problems. This study aims to determine the prevalence of the use of PIM, level of medication knowledge and adherence among the nursing home residents and community-dwelling Filipino elderly. An observational cross-sectional study was performed to identify the present medications of the elderly, and the levels of medication knowledge and adherence were determined with the self-reported medication knowledge tool by Burge et al. and the Morisky medication adherence scale. A total of 163 nursing home residents (46.01%) and community-dwelling (53.99%) elderly were interviewed through a purposive technique. Polypharmacy was observed in 25.15% (n=163) respondents, majority of which are community-dwelling (63.41%, n=88). Thirty-six percent of the elderly (n=163) were moderately knowledgeable about their medications. The community-dwelling elderly (n=88) had a significantly greater mean medication knowledge than that of the nursing home residents (p<0.001). Seventy-two (44.17%, n=163) elderly had medium adherence, and no significant difference (p=0.277) on adherence between the 2 groups were found. Moreover, medication knowledge and adherence are associated with one another (p<0.001). The prevalence of PIM use (n=597) based on the 2012 Beers criteria and the PIM-Taiwan criteria are 10.05% and 8.71%, respectively. According to the 2012 Beers criteria, 18 PIM were taken by 32.51% (n=163) of the elderly and the most common were aspirin, diclofenac and mefenamic acid. Based on the PIM-Taiwan criteria, 15 PIM were identified and taken by 25.77% (n=163) of the respondents. The medication utilization of Filipino elderly is average and the use of PIM is present among them.

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