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The effect of administration media on palatability and ease of swallowing of multiparticulate formulations

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Multiparticulate formulations based on pellets, granules or beads, could be advantageous for paediatrics, geriatrics and patients with swallowing difficulties. However, these formulations may require suitable administration media to facilitate administration. The aim of this work was to investigate the effect of administration media properties on palatability and ease of swallowing of multiparticulates. A range of vehicles were developed using xanthan gum (XG) and carboxymethyl cellulose (CMC) as model hydrocolloids. Such vehicles were prepared at three consistency levels (Level 1 – ‘syrup’, Level 2 – ‘custard’ and Level 3 – ‘pudding’) to investigate the effect of viscosity on their performance as administration media. A randomised, single-blind sensory evaluation study was carried out in thirty healthy adult volunteers using microcrystalline cellulose pellets as model multiparticulates, dispersed in the hydrogels (and water as control) at a concentration of 250 mg in 5 ml. Samples were evaluated using 5-point scales. The use of hydrogels as administration media improved a range of sample attributes compared to water formulations, including appearance, taste, mouthfeel, ease of swallowing and residue in the mouth (all improved by ca. 0.5 points) and oral grittiness perception (improved by ca. 1 point). Polymeric hydrogels thickened to medium consistency (Level 2, XG 0.5% and CMC 1.0% w/v) demonstrated the best performance.

Keywords: multiparticulate formulations; paediatrics; geriatrics; swallowing; rheology; palatability; patient acceptability.

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