

Characterization of Gloop: is it suitable for medication delivery in dysphagic patients?

Lucia Crino, Yady J Manrique-Torres, Julie AY Cichero, Kathryn J Steadman. School of Pharmacy, The University of Queensland, Brisbane, QLD.

Introduction. A medication lubricant, Gloop, designed to facilitate the swallowing of solid oral dosage forms, has recently been introduced into the Australian market. Gloop is intended to help those who have a psychological aversion to swallowing whole tablets and capsules. Dysphagic patients have a physiological reason for swallowing difficulties, and the question arises as to whether Gloop would be safe and useful for this patient group.

Aims. To investigate the physicochemical properties of Gloop and evaluate its influence on drug release in oral medication delivery with respect to its potential use in patients with dysphagia.

Methods. Rheological characterisation of Gloop was performed using a Rheometer TA Instrument hybrid with peltier and parallel plates at 37°C. Flow curves using shear rates up to 10000 s⁻¹ and viscosity at 50 s⁻¹ were obtained. Viscoelasticity was assessed in the linear viscoelastic region with frequency sweeps between 1 to 100 Hz. The effect of Gloop on dissolution of paracetamol 500 mg tablets was assessed following standard USP and BP guidelines. Micro-release from crushed tablets in static conditions was also measured using vertical diffusion cell apparatus.

Results. The viscosity of Gloop at 50 s⁻¹ was 464 cP, as measured in a peak hold test, which is similar to yoghurt (459 cP). Rheological profile indicated that Gloop is a viscoelastic fluid, with storage modulus (G') values greater than loss modulus (G'') and both G' and G'' being constant. Paracetamol dissolution was unaffected by the presence of Gloop, in fact the tablet was observed to separate from the gel immediately on entry to the dissolution vessel.

Discussion. Gloop is consistent with Level 400 in the dysphagia-oriented product classification¹ and has no effect on drug dissolution, unlike some gum-based thickeners designed to ensure safe fluid delivery in dysphagia². However, due to Gloop's slipperiness and propensity for the tablet to slide out of the gel, further work is required to determine whether it will safely transport medications without aspiration before Gloop is recommended for use in dysphagics.

¹Jukes S, Cichero JAY, Haines T, Wilson C, Paul K, O'Rourke M. Int J Speech Lang Pathol. 2012; 14(3):214-225

²Manrique YJ, Lee DJ, Islam F, Nissen LM, Cichero JAY, Stokes RJ, Steadman KJ. 2014; 17(2): 207-219

