

POLYSACCHARIDE MUCOADHESIVE INTERACTIONS

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The alimentary tract is not only the route for digestion of food but also the most popular route for administration of drugs. The efficiency of the latter is however poor, and presents a fascinating physiological challenge. The mucoadhesive properties of certain types of polysaccharide can in principle be used to help address this problem by increasing the residence time of drugs as they pass through the stomach and small intestine [1]. A combination of molecular hydrodynamics (analytical ultracentrifugation, size exclusion chromatography and multi-angle laser light scattering) together with imaging procedures (electron microscopy, atomic force microscopy) reinforced by macroscopic observations (e.g. tensiometry) can be used to help select the appropriate biopolymer carrier in terms of adhesiveness. In this regard chitosans have proved very attractive although these molecules present problems concerning solubility and stability [1,2].

The physical form of the carrier (gel/microsphere/capsule etc.) has then to be designed which has to take account of the large change in solvent environment from the mouth to the optimum sites of absorption: in this regard the nasal route has proved an attractive alternative and absorption data particularly with powder as opposed to solution forms have been promising.

- [1] SE Harding, SS Davis, MP Deacon, I Fiebrig (1999) Biopolymer Mucoadhesives, *Biotech. Gen. Eng. Rev.* **16**, 41-86 (& refs. cited therein)
[2] Harding SE (2003) Mucoadhesive interactions, *Biochem. Soc. Trans.* **31**, 1036-1041 (& refs cited therein).