

PolyGlycopleX[®] (PGX[®]) is a unique, high-viscosity functional fibre that can be used in functional foods, dietary and health products.

Abdelhameed AS, Ang S, Morris GA, Smith I, Lawson C, Gahler R, Wood S, Harding SE. An analytical ultracentrifuge study on ternary mixtures of konjac glucomannan supplemented with sodium alginate and xanthan gum. *Carbohydrate Polymers* 2010. In press, doi:10.1016/j.carbpol.2010.01.043

PolyGlycopleX[®] (PGX[®]) is a unique, high-viscosity functional fibre that can be used in functional foods, and dietary and health products. This novel fibre is manufactured by a proprietary process, using a proprietary ratio of the natural polysaccharides, konjac glucomannan, xanthan and alginate. The present short study examines the properties of the three raw ingredients individually – glucomannan, xanthan and alginate, in a proprietary ratio – and PGX[®]. This was done to first establish the molecular integrity of each ingredient and then to investigate whether interactions among them may account for the unexpected high viscosity of PGX[®]. An analytical ultracentrifuge, using the technique of sedimentation velocity was used to probe for interactions, as manifested by changes in the sedimentation coefficient distributions compared to unmixed controls. This technique avoids various challenges posed by older methods of analysis, as well as solvent effect. The authors concluded that PGX[®] and the combination of the three ingredients in the same proprietary ratio used to make PGX[®] exhibited interaction products. These results lead to the conclusion that PGX[®] is a novel complex. The IUPAC name for this complex is (α -D-glucurono- α -D-manno- β -D-manno- β -D-glucopyranoside), (α -L-gulurono- β -D-mannuronic acid), β -D-glucopyranoside- β -D-mannan.

Binary mixtures of konjac and xanthan are known to exhibit synergistic interactions. However, when the low viscosity alginate was added into this system, an even greater synergism was exhibited. This is counterintuitive; further strengthening that synergism and hence enhanced viscosity by complexation is taking place.