Rheological and diffusion properties of a dextran-con a polymer in the presence of insulin and magnesium

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Unfortunately due to technical errors the references were not published completely. The complete references are the following. The publisher apologizes for this mistake.

References

- Agrawal BB, Goldstein IJ, Hassing GS, So LL (1968) Protein–carbohydrate interaction. XVIII. The preparation and properties of acetylated concanavalin A, the hemagglutinin of the jack bean. *Biochemistry* 7(12):4211–4218
- Arata T, Okitsu T, Fukazawa T, Ikeda H, Kobayashi K, Yong C, Kosaka Y, Narushima M, Matsuoka J, Yamamoto I, Tanaka N, Lakey JR, Kobayashi N (2004) Maintenance of glucose-sensitive insulin secretion of cryopreserved human islets with University of Wisconsin solution and ascorbic acid-2 glucoside. *Artif Organs* 28(6):529–536
- Becker JW, Reeke GN Jr, Wang JL, Cunningham BA, Edelman GM (1975) The covalent and three-dimensional structure of concanavalin A. III. Structure of the monomer and its interaction with metals and saccharides. *J Biol Chem* 250(4):1513–1524
- Becker JW, Reeke GN Jr, Cunningham BA, Edelman GM (1976) New evidence on the location of the saccharide-binding site of concanavalin A. *Nature* 259(5542):406–409
- Bergeron L, Filobelo LF, Galkin O, Vekilov PG (2003) Thermodynamics of the hydrophobicity in crystallization of insulin. *Biophys J* 85(6):3935–3942
- Bouckaert J, Loris R, Wyns L (2000a) Zinc/calcium- and cadmium/cadmium-substituted concanavalin A: interplay of metal binding, pH and molecular packing. *Acta Cryst D Biol Crystallogr* 56:1569–1576
- Bouckaert J, Dewallef Y, Poortmans F, Wyns L, Loris R (2000b) The structural features of concanavalin A governing non-proline peptide isomerization. *J Biol Chem* 275(26):19778–19787
- Brange J (1987) *Galenics of insulin—the physico-chemical and pharmaceutical aspects of insulin and insulin preparations*. Springer-Verlag, Berlin Heidelberg New York
- Brange J, Langkjoer L (1993) *Insulin structure and stability*. *Pharm Biotechnol* 5:315–350
- Brewer C, Bhattacharyya L, Brown RD III, Koenig SH (1985) Interactions of concanavalin A with a trimannosyl oligosaccharide fragment of complex and high mannose type glycopeptides. *Biochem Biophys Res Commun* 127(3):1066–1071
- Cunningham BA, Wang JL, Waxdal MJ, Edelman GM (1975) The covalent and three-dimensional structure of concanavalin A. II. Amino acid sequence of cyanogen bromide fragment F3. *J Biol Chem* 250(4):1503–1512
- Ende N, Chen R, Reddi AS (2004) Transplantation of human umbilical cord blood cells improves glycemia and glomerular hypertrophy in type 2 diabetic mice. *Biochem Biophys Res Commun* 321(1):168–171
- Flocco MM, Mowbray SL (1994) Planar stacking interactions of arginine and aromatic side-chains in proteins. *J Mol Biol* 235(2):709–717
- Fong TM, Cascieri MA, Yu H, Bansal A, Swain C, Strader CD (1993) Amino-aromatic interaction between histidine 197 of the neurokinin-1 receptor and CP 96345. *Nature* 362(6418):350–353
- Goldstein IJ, Hollerman CE, Smith EE (1965) Protein–carbohydrate interaction. II. Inhibition studies on the interaction of concanavalin A with polysaccharides. *Biochemistry* 4:876–883
- Goldstein IJ, Reichert CM, Misaki A, Gorin PAJ (1973) An extension of the carbohydrate binding specificity of concanavalin A, a lectin isolated from jack bean, with polysaccharides. *Arch Biochem Biophys* 151:500–504

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- Goldstein IJ et al (1976) Carbohydrate binding specificity of concanavalin A. In: Bittiger H, Schnebli HP (eds) Concanavalin A as a tool. Wiley, London, pp 55–65
- Gordon JA, Young RK (1978) The role of concanavalin A dissociation on positive cooperativity of binding with native and fixed erythrocytes. *J Biol Chem* 254:1932–1937
- Gottsater A, Szelag B, Kangro M, Wroblewski M, Sundkvist G (2004) Plasma adiponectin and serum advanced glycosylated end-products increase and plasma lipid concentrations decrease with increasing duration of type 2 diabetes. *Eur J Endocrinol* 151(3):361–366
- Greer J, Kaufman H, Kalb A (1970) An x-ray crystallographic study of concanavalin A. *J Mol Biol* 48(2):365–366
- Grimaldi J, Sykes B (1975) Concanavalin A: a stopped flow nuclear magnetic resonance study of conformational changes induced by Mn^{++} , Ca^{++} , and alpha-methyl-D-mannoside. *J Biol Chem* 250(5):1618–1624
- Guilmot JL, Diot E, Boissier C (2001) Diabetic arteriopathy. Microcirculation, an inevitable therapeutic objective. *J Mal Vasc* 26(2):135–141
- Haruta S, Hanafusa T, Fukase H, Miyajima H, Oki T (2003) An effective absorption behavior of insulin for diabetic treatment following intranasal delivery using porous spherical calcium carbonate in monkeys and healthy human volunteers. *Diabetes Technol Ther* 5(1):1–9
- Inbar M, Sachs L (1969) Structural difference in sites on the surface membrane of normal and transformed cells. *Nature* 223(207):710–712
- Jack A, Weinzierl J, Kalb A (1971) An x-ray crystallographic study of demetallized concanavalin A. *J Mol Biol* 58(1):389–395
- Kalb AJ, Levitzki A (1968) Metal-binding sites of concanavalin A and their role in the binding of alpha-methyl D-glucopyranoside. *Biochem J* 109(4):669–672
- Kato T, Kiyohara Y, Manaka H, Suzuki K, Hiraizumi M (2004) Clinical study on diabetic neuropathies. *Nippon Naika Gakkai Zasshi* 93(8):1597–1614
- Kim JJ, Park K (2001) Modulated insulin delivery from glucose-sensitive hydrogel dosage forms. *J Control Release* 77(1–2):39–47
- Kost J, Langer R (2001) Responsive polymeric delivery systems. *Adv Drug Delivery Rev* 46(1):125–148
- Loris R, Maes D, Poortmans F, Wyns L, Bouckaert J (1996) A structure of the complex between concanavalin A and methyl-3,6-di-O-(α -D-mannopyranosyl)- α -D-mannopyranoside reveals two binding modes. *J Biol Chem* 271(48):30614–30618
- Mandal DK, Brewer CF (1992) Interactions of concanavalin A with glycoproteins: formation of homogeneous glycoprotein-lectin cross-linked complexes in mixed precipitation systems. *Biochemistry* 31:12602–12609
- Mitchell JB, Nandi CL, McDonald IK, Thornton JM, Price SL (1994) Amino/aromatic interactions in proteins: is the evidence stacked against hydrogen bonding? *J Mol Biol* 239(2):315–331
- Miyata T, Urugami T, Nakamae K (2002) Biomolecule-sensitive hydrogels. *Adv Drug Deliv Rev* 54(1):79–98
- Naismith JH, Field RA (1996) Structural basis of trimannoside recognition by concanavalin A. *J Biol Chem* 271(2):972–976
- Nettleton EJ, Tito P, Sunde M, Bouchard M, Dobson CM, Robinson CV (2000) Characterization of the oligomeric states of insulin in self-assembly and amyloid fibril formation by mass spectrometry. *Biophys J* 79(2):1053–1065
- Neuman P, Cody V, Wojtezak A (2001) Structural basis of negative cooperativity in transthyretin. *Acta Biochim Pol* 48(4):867–875
- Oomen PH, Kant GD, Dullaart RP, Tervaert JW, Reitsma WD, Smit AJ (2004) No effects of acute hyperglycaemia and hyperinsulinaemia on skin microcirculation and endothelial markers in Type II diabetes mellitus. *Scand J Clin Lab Invest* 64(2):119–127
- Parker RS, Doyle FJ 3rd, Peppas NA (1999) A model-based algorithm for blood glucose control in type 1 diabetic patients. *IEEE Trans Biomed Eng* 46(2):148–157
- Parker RS, Doyle FJ III, Peppas NA (2001) The intravenous route to blood glucose control. *IEEE Eng Med Biol Mag* 20(1):65–73
- Perutz MF (1993) The role of aromatic rings as hydrogen-bond acceptors in molecular recognition. *Phil Trans Roy Soc Ser A* 345:105–112
- Poretz RD, Goldstein IJ (1970) An examination of the topography of the saccharide binding sites of concanavalin A and of the forces involved in complexation. *Biochemistry* 9(14):2890–2896
- Qui Y, Park K (2001) Environment-sensitive hydrogels for drug delivery. *Adv Drug Deliv Rev* 53(3):321–339
- Reeke GN Jr, Becker JW, Edelman GM (1975) The covalent and three-dimensional structure of concanavalin A. IV. Atomic coordinates, hydrogen bonding, and quaternary structure. *J Biol Chem* 250(4):1525–1547
- Sherry AD, Cottam GL (1973) Proton relaxation rate and fluorometric studies of manganese and rare earth binding to concanavalin A. *Arch Biochem Biophys* 156(2):665–672
- Sherry AD, Newman AD, Gutz CG (1975) The activation of concanavalin A by lanthanide ions. *Biochemistry* 14(10):2191–2196
- Tanna S, Taylor MJ, Adams G (1999) Insulin delivery governed by covalently modified lectin-glycogen gels sensitive to glucose. *J Pharm Pharmacol* 51(10):1093–1098
- Taylor MJ, Tanna S, Taylor PM, Adams G (1995) The delivery of insulin from aqueous and non-aqueous reservoirs governed by a glucose sensitive gel membrane. *J Drug Target* 3(3):209–216
- Waksman G, Kominos D, Robertson SC, Pant N, Baltimore D, Birge RB, Cowburn D, Hanafusa H, Mayer BJ, Overduin M, Resh MD, Rios CB, Silverman L, Kuriyan J (1992) Crystal structure of the phosphotyrosine recognition domain SH2 of v-src complexed with tyrosine-phosphorylated peptides. *Nature* 358(6388):646–653
- Wang JL, Cunningham BA, Waxdal MJ, Edelman GM (1975) The covalent and three-dimensional structural of concanavalin A. I. Amino acid sequence of cyanogen bromide fragments F1 and F2. *J Biol Chem* 250(4):1490–1502
- Wang JM, Takeda A, Yang JT, Wu CS (1992) Conformation of concanavalin A and its fragments in aqueous solution and organic solvent-water mixtures. *J Protein Chem* 11(2):157–164
- Wang C, Stewart RJ, Kopecek J (1999) Hybrid hydrogels assembled from synthetic polymers and coiled-coil protein domains. *Nature* 397(6718):417–420
- Yariv J, Kalb AJ, Levitski A (1968) The interaction of concanavalin A with methyl- α -D-glucopyranoside. *Biochim Biophys Acta* 165:303–305