

Abstract

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Poly(sugar acids): Novel acidic polysaccharide poly[3-(3,4-dihydroxyphenyl)glyceric acid] from medicinal plants of Boraginaceae family, its synthetic analogues and their potential therapeutic efficacy

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Abstract:

The main chemical constituent of high molecular (>1000 kDa) water-soluble preparations from medicinal plants of *Symphytum asperum*, *S. caucasicum*, *S. officinale*, *S. grandiflorum*, *Anchusa italica*, *Cynoglossum officinale* and *Borago officinalis* (Boraginaceae) according to data of liquid-state ¹H, ¹³C NMR, 2D ¹H/¹³C HSQC, 2D DOSY and solid-state ¹³C NMR spectra was found to be poly[oxy-1-carboxy-2-(3,4-dihydroxyphenyl)-ethylene] or poly[3-(3,4-dihydroxyphenyl)glyceric acid] (PDPGA). The polyoxyethylene chain is the backbone of this polymer molecule and 3,4-dihydroxyphenyl and carboxyl groups are regular substituents at two carbon atoms in the chain. The repeating unit of this regular polymer is 3-(3,4-dihydroxyphenyl)glyceric acid residue. PDPGA as a 3,4-dihydroxyphenyl derivative of poly(2,3-glyceric acid ether) relates to a class of acidic polysaccharides [poly (sugar acids)] as well. Its basic monomeric moiety glyceric acid is oxidative form of aldotrioseglyceraldehyde. Hyaluronidase (Hyal-1) degrades high molecular mass of hyaluronic acid into smaller fragments which have pro-inflammatory effects. PDPGA possesses the ability to inhibit the enzymatic activity of Hyal-1 completely.

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Biography:

Dr. Vakhtang Barbakadze has his expertise in isolation and structure elucidation of biologically plant polysaccharides and polyethers. In 1978 and 1999 he has completed his Ph.D and D.Sci., respectively. He is the Head of Department of Plant Biopolymers at the Tbilisi State Medical University Institute of Pharmacochimistry. In 1996 and 2002 he has been a visiting

scientist at Utrecht University (The Netherlands) by University Scholarship and The Netherlands organization for scientific research (NWO) Scholarship Scientific Program, respectively. He has published more than 100 papers in reputed journals. In 2004 he was Georgian State Prize Winner in Science and Technology.

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