

## Sugar-Based Biopolymers: Biologically Active Poly(Sugar Acid) – Poly[3-(3,4-Dihydroxyphenyl)Glyceric Acid] from Medicinal Plants of Boraginaceae Family

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### Abstract

Novel representative of sugar-based biopolymers is 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 <sup>1</sup>H, <sup>13</sup>C NMR, 2D <sup>1</sup>H/<sup>13</sup>C HSQC, 2D DOSY and solid-state <sup>13</sup>C NMR spectra this biopolymer was found to be poly[oxy-1-carboxy-2-(3,4-dihydroxyphenyl)ethylene] or poly[3-(3,4-dihydroxyphenyl)glyceric acid] (PDPGA) with the 3-(3,4-dihydroxyphenyl)glyceric acid residue as the repeating unit. 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. PDPGA as 3,4-dihydroxyphenyl derivative of poly(2,3-glyceric acid ether) belongs to a rare class of poly(sugar acids) as well. Poly(2,3-glyceric acid ether) chain is the backbone of this polymer and 3,4-dihydroxyphenyl groups are regular substituents at carbon atoms in the chain. .

### Biography:

Dr. Vakhtang Barbakadze has his expertise in isolation and structure elucidation of biologically active 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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