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Author	清水, 訓子(Shimizu, Noriko) 友田, 正司(Tomoda, Masashi) 権田, 良子(Gonda, Ryoko) 金成, 美枝子(Kanari, Mieko) 高梨, 典子(Takanashi, Noriko) 高橋, 菜穂子(Takahashi, Nahoko)
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## The Major Pectic Arabinogalactan Having Activity on the Reticuloendothelial System from the Roots and Rhizomes of *Saposhnikovia divaricata*\*

Noriko SHIMIZU, Masashi TOMODA, Ryōko GONDA, Mieko KANARI,  
Noriko TAKANASHI and Nahoko TAKAHASHI

清水訓子, 友田正司, 権田良子, 金成美枝子, 高梨典子, 高橋菜穂子

The major acidic polysaccharide, named saposhnikovan A, was isolated from the roots and rhizomes of *Saposhnikovia divaricata* by the extraction with hot water and the precipitation with cetyltrimethylammonium bromide followed by ion-exchange chromatography with DEAE-Sephadex A-25 (acetate) and gel chromatography with Sephadex G-50 and Sephacryl S-300. The purified polysaccharide gave a single band on PAGE and gave a single spot on cellulose acetate membrane electrophoresis and a single peak on gel chromatography.

Saposhnikovan A is composed of L-arabinose : D-galactose: D-galacturonic acid in the molar ratio of 6 : 15 : 10, and its molecular weight was estimated to be 54000. About 35% of the D-galacturonic acid residues exist as the methyl esters.

The results of methylation analysis of the original polysaccharide and the carboxyl-reduced derivative and  $^{13}\text{C}$ -NMR spectrum suggested that the minimal unit of saposhnikovan A is composed of six terminal  $\alpha$ -L-arabinofuranose, six  $\alpha$ -1,5-linked L-arabinofuranose, twenty-seven  $\beta$ -1,3-linked D-galactopyranose, three 3,6-branched  $\beta$ -D-galactopyranose, seventeen  $\alpha$ -1,4-linked D-galactopyranosyluronic acid, one 2,4-branched  $\alpha$ -D-galactopyranosyluronic acid and two 3,4-branched  $\alpha$ -D-galactopyranosyluronic acid residues. In addition, the controlled Smith degradation revealed the presence of a backbone chain composed of  $\alpha$ -1,4-linked D-galacturonan. Some of the units in the backbone carry arabinogalactan side chains at positions 2 and 3. The side chains are mainly composed of  $\beta$ -1,3-linked D-galactopyranose units containing 3,6-branched units, and  $\alpha$ -1,5-linked L-arabinofuranosyl residues occupy terminal positions.

The effect of saposhnikovan A on a reticuloendothelial system (RES) was demonstrated by the *in vivo* carbon clearance test. When administered i.p. (50 mg/kg), the phagocytic indices of saposhnikovan A, zymosan (a positive control) and control (blank) were  $0.2367 \pm 0.0427$ ,  $0.1713 \pm 0.0361$  and  $0.0778 \pm 0.0108$ . Thus the value was remarkably increased, suggesting powerful activation of RES by i.p. injection of saposhnikovan A. Saposhnikovan A is a new structural type of polysaccharide having remarkable activity on the RES.

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