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## A Reticuloendothelial System-Activating Glycan from the Seeds of *Malva verticillata*\*

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From the hot water extract of the seeds of *Malva verticillata*, a polysaccharide, designated as MVS-III A, has been isolated by fractionation on DEAE-Sephadex A-25 (carbonate) followed by gel chromatography on Sephacryl S-500 and affinity chromatography on Con A-Sepharose columns. The polysaccharide gave a single band on PAGE and gave a single peak on gel chromatography.

MVS-III A is composed of L-arabinose : D-xylose : D-galactose : D-galacturonic acid in the molar ratio of 16 : 1 : 8 : 3, and it contains a peptide moiety (1.7%). Its value of molecular mass was estimated to be about  $8.5 \times 10^6$ .

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 the polysaccharide is composed of four terminal  $\alpha$ -L-arabinofuranose, ten  $\alpha$ -1,5-linked L-arabinofuranose, two  $\alpha$ -1,3-linked L-arabinopyranose, one  $\beta$ -1,4-linked D-xylopyranose, four  $\beta$ -1,3-linked D-galactopyranose, four 3,6-branched  $\beta$ -D-galactopyranose and  $\alpha$ -1,4-linked D-galacturonan residues. The periodate oxidation studies also supported these conclusions.

The effect of MVS-III A on a RES was demonstrated by the *in vivo* carbon clearance test. When administered i.p. (50 mg/kg), the phagocytic index of MVS-III A was  $0.4492 \pm 0.1048$ . Thus the value was quite remarkably increased, suggesting powerful activation of RES by i.p. injection of MVS-III A.

The structural characterization of MVS-III A is both its high arabinose content and the presence of  $\alpha$ -1,3-linked L-arabinopyranose residues. Most of the RES-activating polysaccharides from Oriental crude drugs contain arabino-3,6-branched galactan units in common as their major parts, though they have different types of backbone chain.

\* 本報告は *Phytochemistry* 28, 2609—2611 (1989) に発表。