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**Plant Mucilages. XLII. An Anti-Complementary Mucilage from the Leaves of *Malva sylvestris* var. *mauritiana*\***

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A mucilage, designated as MSL-M, was isolated from the leaves of *Malva sylvestris* var. *mauritiana* by extraction with cold water followed by fractionation of DEAE-Sephadex A-25 (carbonate) and purification by successive gel chromatography on Sephacryl S-300, Toyopearl HW-75F and Sephadex G-25 columns. The mucilage gave a single peak on gel chromatography and gave a single band on PAGE.

MSL-M contains 94.4% polysaccharide and 5.0% peptide moiety. The polysaccharide is composed of L-rhamnose : D-galactose : D-galacturonic acid : D-glucuronic acid in the molar ratio of 6 : 3 : 2 : 2. Its intrinsic viscosity value in aqueous solution was 12.0, and the value of molecular mass was estimated to be about  $6.0 \times 10^6$ .

The results of methylation analysis of MSL-M and the carboxyl-reduced derivative and  $^{13}\text{C}$ -NMR spectrum suggested that the minimal unit of the polysaccharide moiety is composed of five  $\alpha$ -1,2-linked L-rhamnose, one 2,4-branched  $\alpha$ -L-rhamnose, one terminal  $\beta$ -D-galactose, two  $\beta$ -1,4-linked D-galactose, two 3,4-branched  $\alpha$ -D-galacturonic acid and two terminal  $\beta$ -D-glucuronic acid residues.

Partial hydrolysis of MSL-M followed by fractionation on DEAE-Sephadex A-25 (formate) column afforded four known oligosaccharides. Based on the accumulated evidence, it can be concluded that the polysaccharide moiety contains two units,  $(1 \rightarrow 4)\text{-}[\beta\text{-D-Glc}\alpha\text{A-(1} \rightarrow 3)\text{-}\alpha\text{-D-Gal}\beta\text{A-(1} \rightarrow 2)\text{-}\alpha\text{-L-Rha}\beta]$  and  $\alpha$ -1,2-linked  $\alpha$ -L-Rha $\beta$ , in a ratio of 1 : 2 as the backbone, and that one-sixth of the rhamnose residues in the backbone carries side chains composed of  $\beta$ -1,4-linked D-galactopyranose units at position 4.

MSL-M showed potent anti-complementary activity compared with the positive control, AR-4, from the root of *Angelica acutiloba*. The highly branched structure could be involved in the activity.

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