

Polysaccharides From Symbiotic Green Microalga *Coccomyxa mucigena*.

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Coccomyxa is a genus of green algae that can be found free-living or in close association with fungi, forming lichens. The specie *C. mucigena* (strain 216-4) was purchased from Culture Collection of Algae (SAG) at the University of Göttingen, and is the green algal primary photobiont of the lichen *Peltigera aptosa*. To obtain biomass, the microalga was cultivated in a liquid nutrient medium. Freeze-dried cells (33.7g) were defatted with ethanol and CHCl₃ – MeOH (1:1, v/v), and the polysaccharides extracted successively with water (fraction CMW, 4.5% yield) and aq. 10% KOH (fraction CMK, 13.2% yield), each at 100°C. After purification steps (freeze-thawing, deproteinization, closed dialysis and ultrafiltration), a manogalactan was obtained. It gave an homogeneous peak in the HPSEC analysis and was composed by 4-O-methyl-mannose (17.2%), mannose (12.6%) and galactose (70.2%). The ¹³C NMR spectrum showed four main C1 signals, at δ 100.5, 103.2, 103.4 and 103.6 ppm, indicating that the galactose units are in the piranosidic form. The signal of the CH₃ group of the mannose units could be seen at 56.5 ppm. An inverted signal at 70.0 ppm in the DEPT135 experiment indicated that this polysaccharide has 6-O-substituted units. A methylation analysis is being carried out to determine the fine chemical structure of this manogalactan. As far as we know, there is no report in the literature for the presence of naturally 4-O-methylated mannose units. Moreover, this manogalactan differs from the manogalactan found in other green algal symbiont of the genus *Trebouxia* sp, which contains all the galactose units in the furanosidic form (Cordeiro et al., 2008).

Keywords: *Coccomyxa mucigena*, microalga, 4-O-methylmannose units, manogalactan