B073 Structural investigation of the carbohydrate moiety of an arabinogalactan protein from the roots of *Baptisia tinctoria*

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Baptisia tinctoria (L.) R. Brown (wild indigo), is a native plant from Northern America. Root extracts are used as an unspecific stimulant of the immune system. Polysaccharides and glycoproteins are thought to be involved in immunostimulation (1,2).

The aim of this work was to isolate an arabinogalactan protein (AGP) from an aqueous extract of dried roots of the plant and to study the chemical structure of the carbohydrate moiety of the macromolecule.

Roots were extracted with water and the extract was divided into a high molecular weight fraction (HMF) and a low molecular weight fraction (LMF) by tangential flow filtration with a MWCO of 30.000 Da. After dialysis of the HMF an AGP was isolated by precipitation with β-glucosyl-Yariv reagent. Methylation analysis of the AGP and the products of acid hydrolysis and reduction of uronic acids was performed to have an idea of the chemical structure of the AGP. The results show a molar ratio between branching sugar components, backbone sugar components and terminal sugar components of 1:1:1 which leads to the assumption that the macromolecule is highly branched. The molecular weight of the AGP, determined by SEC shows a hydrodynamic volume of about 60.000 Da using pullulans (linear polysaccharides) as standard whereas the absolute molecular weight was estimated to be about 300.000 Da using a light scattering detector. These values support the results of methylation analysis by indicating a non-linear compact highly branched molecule.

References: 1. Beuscher, N., Kopanski, L. (1989) Planta Med. 55: 358-363. **2.** Wagner, H. et al. (1985) Arzneim. Forsch. 35, 1069-1075.

B074 A new coumarin from *Sanguisorba minor*

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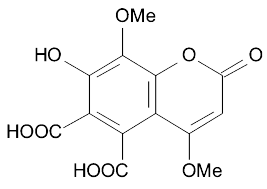
Wild Rosaceous plants of Egypt are known in folk medicine to produce extracts of hypoglycemic activity. The present study describes the isolation and structure elucidation of nine phenolics from the aqueous/ethanolic whole plant extract of *Sanguisorba minor*. Only one of these compounds was new and was found to possess a quite unique carboxy coumarin structure, namely 4,8-dimethoxy-7-hydroxy-2-oxo-2H-1-benzopyran-5,6-dicarboxylic acid (**1**). This followed from the brown $FeCl_3$ test, the electrophoretic mobility, the UV maxima in MeOH at 252, 310, 325 nm, the IR bands at υ 1685, 1700 and 1720 cm^{-1} (consistent with 6-, 5- and 2-CO groups), recovery of the compound unchanged after normal acid hydrolysis and also, from the molecular ion exhibited in negative ESI-MS at m/z: 309 and from the fragment ions at m/z: 264.9 and 221.0 (consistent with [M – COO] and [M – 2 COO]), as well as from the resonance singlets, in 1D-^{1}H NMR spectrum of the compound (DMSO-d_6) at δ ppm 3.82, 3.99 (4- and 8-OMe), 6.55 (H-3) and 12.35 (hydrogen bonded H-7). Both decoupled and gated decoupled ^{13}C NMR have confirmed the achieved structure and showed resonances at δ ppm 172.8(s), 169.1(s), 163.3(d, *J*=1.5 Hz), 56.5(q, *J*=130 Hz), 59.7(q, *J*=130 Hz) and 95.0 (d, *J*=169.3 Hz), assignable to (C6-COOH), (C5-COOH), (C-2), (OMe-4), (OMe-8) and (C-3), respectively. The known compounds, 1-*O*-β-galloyl-glucose; 2,3-hexahydroxydiphenoyl-(α/β)-glucose; gallic acid; 1-galloyl-2,3-hexahydro x ydiphenoyl-α-glucose; its β-isomer; quercetin-3-*O*-β-(6"-galloylgalactoside); kaempherol; quercetin and ellagic acid were also isolated and characterized.



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