

STRUCTURAL INVESTIGATION OF HEMICELLULOSIC POLYSACCHARIDES FROM *ARGANIA SPINOSA*: CHARACTERISATION OF A NOVEL XYLOGLUCAN MOTIF

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Hemicellulose polymers were extracted from *Argania spinosa* leaf cell walls by sequential extractions with alkali. The structure of the two main polymers, xylan and xyloglucan, was investigated by enzyme degradation with specific endoglycosidases followed by the analysis of the resulting fragments by High Performance Anion Exchange-Chromatography (HPAEC) and Matrix-Assisted Laser Desorption Ionization-Time of Flight-mass spectrometry (MALDI-TOF MS). The results show that *Argania spinosa* xylan is composed of a β -(1 $\rightarrow$ 4)-linked-D-xylopyranose backbone substituted with 4-O-methyl-D-glucuronic acid residues. Xyloglucan oligosaccharide subunits were generated by treatment with an *endo*-(1 $\rightarrow$ 4)- β -D-glucanase of the xyloglucan-rich hemicellulosic fractions. MALDI-TOF mass spectra and HPAE-PAD chromatography of the pool of the endoglucanase-generated xyloglucan oligomers indicated that *Argania spinosa* contains a XXXG-type xyloglucan. In addition to XXXG, XXFG, XLXG/XXLG, XLFG fragments previously characterised in various plants, a second group of XXXG-type fragments was detected. The primary structure of the major subunit was determined by a combination of sugar analysis, methylation analysis, post source decay (PSD) fragment analysis of MALDI-TOF MS and ¹H-NMR spectroscopy. This fragment, termed XUFG, contains a novel β -D-Xylp-(1 $\rightarrow$ 2)- α -D-Xylp side-chain linked to C-6 of the second glucose unit of the cellotetraose sequence.