glycosidic moiety with only one sugar molecule, e.g. urdamycinone B, or an oligosaccharide chain, for example urdamycin B. The sugar components of such angucycline group antibiotics seem to play an important role with respect to the antiplatelet activities and the mediation of solubility.

During the last few years several papers presenting different methods for the formation of the *C*-glycosidic bond have been published as well as total syntheses of angucycline antibiotics with D-olivose as the *C*-glycosidic residue. Therefore, we concentrated on the preparation of precursors for the synthesis of angucyclines with *C*-glycosidic linked oligosaccharides. In this connection we want to present our investigations towards the synthesis of precursors bearing the framed disaccharide fraction. This building block is an excellent intermediate for several angucyclines, since in most cases D-olivose, which usually is the first sugar attached to the quinone, is followed by an α-linked L-rhodinose at 3′-OH.

Synthesis of Amphiphilic X-O-n-alkyl-monosaccharides. Substrate Structure and Alkyl Chain Position Influences on Their Liquid Crystalline Properties

Ph. Bault, P. Godé, G. Goethals, B. Harmouch, P. Martin, G. Ronco, L. Spychala and P. Villa*

Laboratoire de Chimie Organique et Cinétique. 33 Rue Saint Leu, Ilôt des Poulies, 80039 Amiens, France

We synthesized the hereafter series of D-galactose, D-glucose, D-mannose and D-Xylose X-O-*n*-alkyl derivatives in which the *n*-alkyl chain R, with 6 to 12 carbon atoms, was regiospecifically introduced at the different positions X in the glucidic substrate – X-O-R-D-galactose, X-O-R-D-Glucose, X-O-R-D-mannose, X-O-R-D-xylose (Me-xyloside).

It is shown, as well in the thermotropic than in the lyotropic liquid cristalline studies, that the phase transition temperatures increase either with the alkyl chain length or with the OH group number increasing. Meanwhile, both the X-position of the alkyl chain and the relative OH group orientations in the heterocycle, have a significant influence on these temperatures.

Vibrational Assignments of Cyclodextrins

Ana M. Amado* and Paulo J.A. Ribeiro-Claro

Unidade "Química-Física Molecular", Faculdade de Ciências e Tecnologia, Universidade de Coimbra, P-3049 Coimbra Codex, Portugal

Cyclodextrins (CDs) are macrocyclic carbohydrates composed of six (α-CD), seven (β-CD), eight (γ-CD), or more, D-glucose units linked by 1,4-α-glycosidic bonds, with the overall shape of a short, hollow, truncated cone. Since all the glucose rings have the same orientation, the narrow rim of the cone is formed by the primary O(6)-H hydroxyl groups while the wider rim is composed by the secondary O(2)-H and O(3)-H hydroxyl groups. The internal cavity is relatively hydrophobic because it is lined by the methylene C-H groups and by the ether-like O(4) and O(5) oxygen atoms.

The vibrational spectroscopy, in particular Raman spectroscopy, has become an important tool for the study of cyclodextrins and their complexes. However, the reports concerning the vibrational assignments of such large systems are scarce and controversial.

In this work, a full vibrational assignment of the CDs spectra is proposed based on the comparison with the vibrational spectra of simpler carbohydrates (eg., glucose, maltose and maltotriose) and isotopic substitution. In addition, the Raman spectra of several methyl and hydroxypropyl substituted cyclodextrins were also recorded and analysed.

Ultrasound-mediated Extraction of the Immunologically Active Xylan Component of Corn Cobs

A. Ebringerová*, Z. Hromádková and V. Høibalová[a]

[a]National Institute of Public Health, 100 42 Prague, Czech Republic

Corn cobs represent an abundant source of two xylan-type polysaccharides, the water-insoluble arabinoglucuronoxylan and the water-soluble heteroxylan. The last mentioned xylan was shown to exhibit significant biological activities comparable to those of the commercial immunomodulator Zymosan. With regard to the demand for ecologically feasible technologies, various conditions of ultrasound-assisted extraction procedures of corn cobs have been investigated. The water soluble xylans isolated by classical and ultrasound-mediated extractions were compared from the viewpoint of yield, composition, structural features, molecular properties, and biological activity in mitogenic and comitogenic thymocyte tests. The results indicate a higher efficiency of ultrasonic methods as well as a higher biological response of the obtained xylans.

Stereoselective Radical Cyclisations Involving Substrates Bearing the 2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranosyl Auxiliary

A.P. Esteves[a], I. Festas[a], A.M. Freitas[a]*, K. Parreño[a], L. Santos[b] and R.J. Stoodley[c]

[a]Dep. de Química, Universidade do Minho, Campus de Gualtar, 4710 Braga, Portugal; [b]Dep. de Engenharia Química, FEUP, Rua dos Bragas, 4000 Porto, Portugal and [c]Department of Chemistry, UMIST, PO Box 88, Manchester M60 1QD, England

The control of stereochemistry in free radical reactions has been substantially advanced in recent years. In this work acetylated D-glucose was used as a chiral auxiliary to provide good stereocontrol in radical reactions. This strategy, which was modeled on a successful approach developed for Diels-Alder reactions, worked well for intramolecular 5-*exo*-cyclisations. Related intermolecular reactions were not as selective.

The generality of the reaction was established and the removal of the chiral auxiliary was achieved with HCl/ROH to give enantiomerically pure trisubstituted tetrahydrofurans with structures analogous to furanlignans. The stereostructures attributed to the cyclic compounds were based on the Beckwith-Houk transition state model.

Rheological Characterization, Under Steady Shear, of a Polysaccharide (Lactan) Obtained Via Fermentation of Whey-related Media

M.E. Pintado, A.E. Pintado, J.A. da Silva and F.X. Malcata-

Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Rua Dr. António Bernardino de Almeida, 4200 Porto, Portugal

Production of lactan, a polysaccharide composed of mannose, galactose, and galacturonic acid at the molar ratios 5:3:2, was