We have synthesised some amphiphilic carbohydrate substituted porphyrins with different carbohydrate moieties. The compounds were synthesised by reaction of glycosyl imidates with the Nickel complex of 5-(4-hydroxymethylphenyl)-2,8,13,17-tetraethyl-3,7,12,18-tetramethylporphine in good yield and characterized by NMR and MS-spectroscopy. Investigation of the binding constant to different plasma proteins (LDL, HDL, VLDL) revealed, that the carbohydrate subunit is of great importance for the binding properties. Furthermore, time-resolved fluorescence spectroscopic measurements confirm that only a small amount of the porphyrinic sensitiser is associated with the apoprotein unit and most of the sensitiser is incorporated into the lipid compartment. These results are of great importance for the development of new sensitisers with enhanced tumour cell selectivity. Binding of sensitisers to the apoprotein unit may alter the interaction of LDL with cancer cells and has to be avoided.

Cellulases in the Textile Industry – An Overview

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Cellulases are well established in textile wet processing as agents for fibre and fabric surface modification. The most known applications are the ageing of fabric surfaces, like the stone washed look of Denim garments, and also the cleaning and renewing of fabric surfaces from microfibrils, fuzz and loss fibres. Apparently these opposite effects can be obtained with the same enzymes. However, cellulases are a multi-component enzyme system, with endoglucanases (EGs) that hydrolyze randomly cellulose chains, cellobiohydrolases (CBHs) that hydrolyze cellobiose from cellulose ends and cellobiases that hydrolyze cellobiose to glucose. The different effects can be obtained with different enzyme compositions, EG or EG rich preparations are best for ageing and defibrillation of fibre surfaces while complete cellulase systems are best for cleaning and dippilling effects. The finishing effects delivered by cellulases are always obtained in process (rotating drum washers and jets) where strong mechanical agitation into the fabrics are provided during the treatments. In this paper a overview is done about the actual knowledge of the processes and future directions of this research field.

Construction of Recombinant BHK Cell Lines Expressing Wild-type and Mutants of Human α1,3/4-fucosyltransferase

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Stable BHK-21 cell lines were constructed expressing i) the wild-type form of human α1,3/4-fucosyltransferase (FT3T2), ii) the sectetory form of the enzyme where amino acids 46-361 (S2FT3TS) were coupled at their amino terminus to the signal sequence of interleukin-2, and iii) a membrane bound form (FT3NPT2) where the amino acid residues Cys-16, Gln-23, Cys-29, and Tyr-33 from the transmembrane domain of the enzyme were replaced by Leu residues.

Cell lines expressing similar amounts of total fucosyltransferase activity were used to localize the three constructs by immunofluorescence microscopy studies. The S2FT3T2 was detected as small vesicles in the cells. The FT3T2 was found to be present within the Golgi and trans-Golgi-network. Most of the FN3NPT2 was detected on the plasma membrane of the recombinant cells. These results suggest that the amino acid residues Cys-16, Gln-23, Cys-29 and Tyr-33 residues of the transmembrane domain of the α1,3/4-fucosyltransferase specify location of the enzyme in the Golgi.

The S2FT3T2 was purified on GDP-Fractogel resin and its specificity towards oligosaccharides, N-glycans, glycolipids, glycopeptides and glycoproteins was studied. The soluble forms of α1,3/4-fucosyltransferase may be used for *in vitro* synthesis of the Lewis^a determinant on carbohydrates and glycoproteins, whereas Lewis^x and sialyl-Lewis^x structures cannot be synthesized.

Cyclodextrins, Supramolecular Devices for Drug Transport and Targeting

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Cyclomaltooligosaccharides (cyclodextrins, CDs) are almost ideal supramolecular devices for the bioavailability enhancement of bioactive compounds, in view of their almost starch like inocuity, and their ability to form inclusion complexes with a wide variety of poorly water soluble molecules, and their recent availability at low costs from well handled biotechnological processes. Problems with such carriers are however still encountered, related with their relatively low solubility in water which affects their solubilization properties, relatively high hemolytic character at least for the more common hepatose entity which limit their parenteral use, and their absence of recognition sites *in vivo*.

Selective chemical modification, still almost restricted to the narrower primary hydroxyl side of the tore, have been designed in order to overcome these shortcomings. Substitution at C-6, as with branched mono- and per-(6-*O* and 6-*S*) linked glycosyl-CDs enhances drastically the solubility and solubilization properties. Interestingly, the thiourea functionality, which was initially introduced as spacer, enhances by itself the solubility as shown with the 6^I-methylthioureido derivative which shows solubility improvements ×43 as compared to β-CD, probably due to the hydrogen bond interaction between thiourea NH protons and water molecules. Bioactive compounds, belonging to various therapeutic classes, have been considered as guests in order to define the optimal parameters for their transport in biological fluids. Using NMR spectroscopy as a main tool, it was shown that a balance between inclusion parameters and solubilization properties had to take into account, not only the size of the cavity, but also the possibility of interaction with the primary hydroxyl bearing side of the tore. In situations where the stabilization of the complex involves the formation of hydrogen bonds, the 6^I-branched derivative exhibits larger binding constants as compared to the persubstituted analog. In addition, when the guest compound interacts from the primary hydroxyls side of the host, as it is the case with the potent anticoagulant 2-phenylindane-1,3-dione, the steric hindrance of the C-6 substituent reduces the affinity. Conversely, the solubilization properties are greatly improved when the host-guest interaction occurs from the secondary hydroxyls side, as with the analgesic carbamazepine or the antidepressant dothiepine. Stabilisation of the trilactonic active form of the