Protecting group manipulations in carbohydrate chemistry

Schedule:

I. Application of protecting groups in carbohydrate chemistry, concept of orthogonal protecting groups

II. Hydroxyl protecting groups

1.) Esters, formation, scope of application, selective removals

2.) Orthoesters, formation, opening, use

3.) Carbonate protecting groups

4.) Ether protecting groups

a) Benzyl-type ethers

b) Importance of trityl ethers

c) Formation and removal of allyl ethers,

d) Formation and removal of silyl ethers

5.) Alkyloxy and aryloxymethyl ethers,

6. Acetal protecting groups

a) cyclic acetals, formation, removal, relative stability

b) oxidative and reductive opening of benzylidene type acetals

c) cyclic acetals on vicinal trans diols

III. Protection of the amino group

1. Amides

2. Imides

3. Carbamates

4. Others

IV. Protection of the carboxyl group

1. esters that can be cleaved by acidic or alkaline hydrolysis

2. esters that can be cleaved by hydrogenolysis

3. esters that can be cleaved by β-elimination

V. Protection of the oxo group

VI. Thiol protecting groups