





• A D-sugar has R configuration for highest number stereogenic center.





i) Isomers of monosaccharide:



* in the above case, the hemiacetal formation could give both isomers (α and β), depending on which face of the carbonyl is attacked. Usually α favoured (anomeric effect)

iii) Taste and Sweetness:



Polysaccharides iv) Acetal formation:





hemiacetal (has one -OH and one -OR group)

an acetal (has two -OR groups)

Mechanism of acetal formation



- Sucrose – disaccharides (glucose + fructose)



Non-reducing (acetals)



v) Classification:

Reducing sugars:

Non-reducing sugars

- all other sugars





l hemiacetal

vi) Polymers of Sugars:

 \rightarrow sugar polymers:

- Cellulose (cotton, paper)



Cellulose (β-1,4-linkages)

Contains acetals (non-reducing sugars)

- Starch (20% amylose and 80% amylopectin)



Amylose (1000 units) above, contains a linear chain of Glucose with α -1,4 linkages



Amylopectin (20-30 units in linear chain) above, in starch has additional α -1,6 linkages crosslinking the chains (approx every 20 units) into sheets. MW ~ 1 to 6 million gmol⁻¹

Glycogen often has a MW of \ge 100 million. -has sheets similar to those of amylopectin.but about 12 units in a chain with 1,6- α -crosslinks every 6 to 12 units