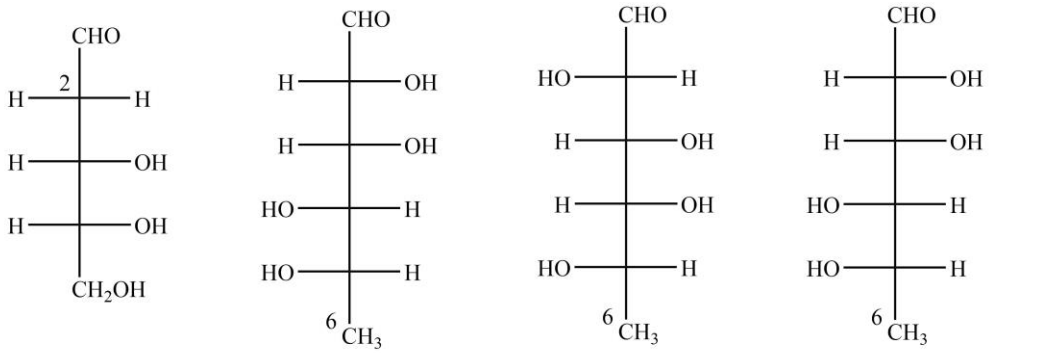
❖ Deoxy Sugars

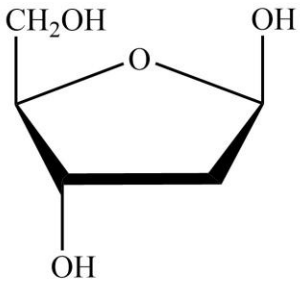
Deoxy sugars may simply be defined as the sugars in which at least one hydroxyl group is replaced by a hydrogen atom.

The common nomenclature of deoxy sugars is carried out by adding the prefix "deoxy" along with the location of carbon at which the displacement has taken place, followed by the common name of parent aldoses or ketoses. On the other hand, the IUPAC nomenclature is done by adding two prefixes before the IUPAC name of parent aldoses or ketoses; the first prefix "deoxy" (along with the location of substituted carbon) and the at which the displacement has taken place followed by the configurational prefix of chiral carbon atoms.

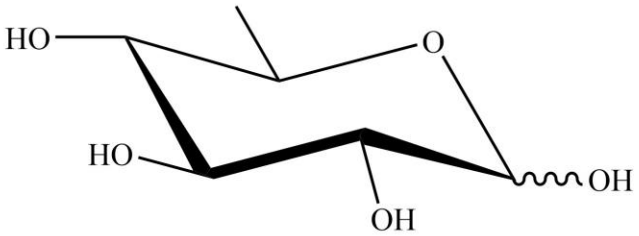


Common Name:	*2-Deoxy-D*-(−)-Ribose	*6-Deoxy-L*-(−)-Mannose	*6-Deoxy-L*-(−)-Galactose	*2, 6-Dideoxy-D*-(+)-Allose
IUPAC Name:	*2-Deoxy-D*-erythropentose	*6-Deoxy-L*-Mannohexose	*6-Deoxy-L*-Galactohexose	*2, 6-Dideoxy-L*-Ribohexose

The most abundant deoxy sugar is deoxyribose which is a major constituent of DNA. Furthermore, it is also worthy to note that although the replacement of the hydroxyl group (by the hydrogen atom) is feasible at any carbon, most of the deoxy sugars are 6-deoxy type.



(I)



(II)

(III)

(IV)

It seems that the deoxygenation at C2 in β-D-ribofuranose enhances the overall stability of the consequential nucleic acid; however, the better hydrophobic interaction at C6 (methyl group) with appropriate receptor sites appears to be the dominant factor in the other three molecules.

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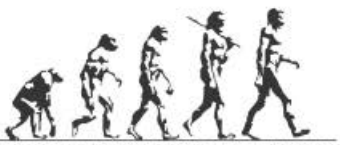

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