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Topic : Structure of DNA (Contd.)

Lecture No. - 104

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• Chemical Composition of DNA:

The DNA molecule is a polymer consisting of several thousand pairs of nucleotide monomers. Each nucleotide contains the pentose sugar deoxyribose, a phosphate group and a nitrogenous base, which may be either a purine or Pyrimidine.

The purin includes Adenine and Guanine while Pyrimidine includes Cytocine and Thymine.

Deoxyribose and nitrogenous base together form a nucleoside.

A nucleoside and a phosphate together form a Nucleotide.

The whole thing is summarized below:

- ① Pentose sugar (S) - Deoxyribose
- ② Phosphate (P)
- ③ Nitrogenous bases
 - ① Purine
 - ② Adenine (A)
 - ③ Guanine (G)
 - ② Pyrimidine
 - ④ Cytocine (C)
 - ⑤ Thymine (T)

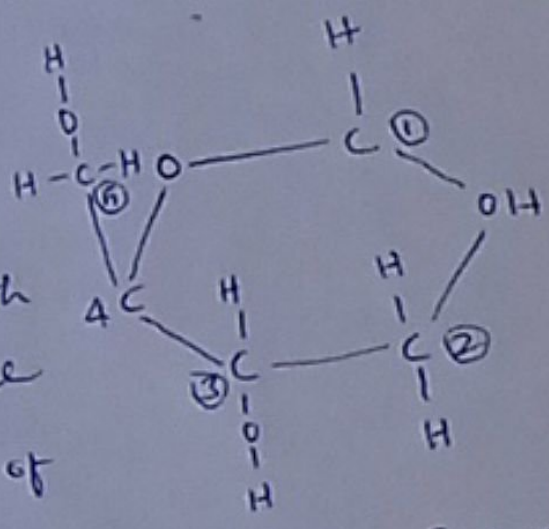
A nucleoside = Deoxyribose + Nitrogenous bases
(sugar) (Purine or Pyrimidine)

A nucleotide = Deoxyribose + Nitrogenous base + Phosphate
(sugar) (Purine or Pyrimidine)

Deoxyribose sugar:

- It is a pentose sugar with five carbon atoms.

Four of the five atoms and a single atom of oxygen form a five membered ring. The fifth carbon atom is outside the ring and form a part of a -CH₂ group.



(Deoxyribose sugar)

The four atoms of the ring are numbered as 1', 2', 3' and 4'.

The carbon atom of CH₂ is numbered as 5'.

There are three -OH groups in the positions 1', 3', and 5'.

Hydrogen atoms are attached to carbon atoms 1', 2', 3' and 4'.



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