

## ASSIGNMENT-4

Why only D sugars and L amino acids are found in all the organism on earth?

Our world has L amino acids as building blocks of proteins and D sugars in Carbohydrates, DNA and RNA. Under prebiotic conditions and due to certain selection homochirality has been formed in the nature. Based in the reasons for selection of L amino acids selection of D sugars can be explained.

➤ **Reason for preferential selection of L amino acid:**

On the basis of experiment on meteorite that fell in Australia it has been found that there are special amino acids with extra methyl group with small excess of L form which under credible prebiotic conditions formed amino acids. This excess of L form is due to high energy light with right circular polarization in our galaxy. Thus, from the beginning there has been an excess of L amino acids.

Later due to preferential crystallization most of the D amino acids have been precipitated and thus making L amino acid dominant enough to start life. Minor amounts of D amino acids have been wiped out with time. This phase is important for life to start because having codominance of DL amino acids would not have led to formation of proteins with well-defined structures.

➤ **Reason for preferential selection of D Sugar:**

Assuming that sugars are formed after the formation of amino acids it has been experimentally verified that L amino acids catalyse the formation of D sugars. Formaldehyde with glycolaldehyde in the presence of L amino acid catalyse the preferential formation of D sugar under prebiotic conditions. Even the formed DL glyceraldehyde undergoes selective solubility which amplifies formation of D glyceraldehyde.

Every sugar formed thus subjected to these conditions select D over L. Ribose which is basic sugar of RNA is more dominant with D form thus further obtained enzymes also catalysed formation of D sugars.

➤ **Conclusion:**

Though initially natural D amino acids and L sugars are obtained they were annihilated with time due to preferential selection. Therefore, L amino acids and D sugars are only found in living organisms in our earth.