Research in Genes and Proteins

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Analytical Characterization of Nucleotides and their Concentration Variation in Drinking Water Treatment Process

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DESCRIPTION

Nucleotides are organic molecules composed of nucleosides and phosphates. They act as monomeric units of nucleic acid polymers Deoxyribonucleic Acid (DNA) and Ribonucleic Acid (RNA) are both essential biomolecules for all living organisms on Earth. Nucleotides are taken with food and are synthesized by the liver from common nutrients. Nucleotides are composed of three subunit molecules: A nucleobase, a 5-carbon sugar (ribose or deoxyribose), and a phosphate group consisting of 1-3 phosphates. RNA uses uracil instead of thymine. Nucleotides also play a central role in metabolism at the basic cellular level. They provide cell-wide chemical energy for many energy-requiring cell functions nucleoside triphosphate, Adenosine Triphosphate (ATP), Guanosine Triphosphate (GTP), citidine triphosphate. Includes the synthesis of amino acids, proteins, cell membranes in the form of acid (CTP), Uridine Triphosphate (UTP), cell-to-cell movement (intracellular and intercellular), cell division, and more. In addition, nucleotides are involved in cellular signal transduction and are incorporated into key cofactors of enzymatic reactions. In experimental biochemistry, radionuclides can be used to radiolabel nucleotides to produce radioactive nucleotides. A molecule composed of nitrogen, phosphate groups, and sugars. DNA and RNA are polymers composed of many nucleotides that are joined together like beads on a strand. Nucleotides are considered the basic components of nucleic acids (such as DNA and RNA). Second, nucleic acids are one of the major groups of biomolecules (the others are carbohydrates, proteins and amino acids). Nucleic acids are involved in the maintenance, replication and expression of genetic information. Nucleotides also provide chemical energy in the form of nucleoside triphosphates. In addition, they are involved in cell signaling and form a second messenger of cellular processes. Nucleotides are organic compounds composed of three subunits: Nitrogen bases, pentacarbon sugars, and phosphate groups. The sugar component can be either ribose or deoxyribose. Ribose is the sugar component of the nucleotides that make up RNA. Deoxyribose sugar is a sugar component of DNA. Phosphate groups and sugar moieties form the skeleton of nucleic acids. In DNA, the two strands are oriented in opposite directions. This is said to enable complementary base pairing between constituent nucleobases. In addition to the long chains of nucleic acids, nucleotides also occur in a circular form. Cyclic nucleotides are formed when a phosphate group binds twice to two hydroxyl groups on the sugar moiety, especially the sugar moiety. In addition to the role of nucleotides as subunits of nucleic acids, they are also energy carriers. They carry the chemical energy that cells use to power various cell activities. Adenosine Triphosphate (ATP) is by far the most common. Do not confuse nucleotides with nucleosides. Nucleosides are also 5-carbon sugars with nitrogen bases. Nucleoside has no phosphate group. When a nucleoside binds to a phosphate group, it becomes a nucleotide. Thus, nucleotides can also be nucleoside monophosphate (having only one phosphate group), nucleoside diphosphate (having two phosphate groups), or nucleoside triphosphate (having three phosphate groups). Depending on the pentose sugar moiety, the nucleoside can be a ribonucleoside or a deoxyribonucleoside. Ribonucleoside is a nucleoside containing ribose (sugar component). Based on the nucleobase component, the ribonucleoside can be adenosine, guanosine, cytidine, uridine. Deoxyribonucleosides are nucleosides that contain deoxyribose. Similarly, the deoxyribonucleoside based on the nucleobase component can be deoxyadenosine, deoxyguanosine, deoxycytidine, deoxythymidine, or deoxyuridine. In addition, nucleosides can be classified as either “double ring” purines or “single ring” pyrimidines, depending on the nuclease component. This molecule is composed of two strands that wrap around each other to form hydrogen bonds to support them at the center of the structure. Each nucleotide it contains has a specific structure that allows this formation. Nitrogen bases are the central signaling part of the nucleotide structure. These molecules with different ex-

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posed functional groups have different abilities to interact with each other. As shown in the picture, the placement of the concept is the maximum amount of hydrogen bonds between the nucleotides involved. Due to the nucleotide structure, only one particular nucleotide can interact with another. This is correct and typical placement. This regular formation causes a twist in the structure and is smooth when there are no defects. One way a protein can repair damaged DNA is to be able to attach to non-uniform spots in the structure. Non-uniform spots are created when no hydrogen bonds occur between opposing nucleotide molecules. The protein cuts one nucleotide and replaces it with another. The dual nature of the gene strand ensures that such mistakes can be corrected with high accuracy.

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