International Research Journal of Biochemistry and Bioinformatics (ISSN-2250-9941) Vol. 11(5) pp. 01
DOI: http:/dx.doi.org/10.14303/irjbb.2021.e002
Available online @http://www.interesjournals.org/IRJBB

Editorial

A synopsis on protein kinase

Jams Gukrit*

Department of Biochemistry, Catholic University of Brasilia, Brasilia, Brazil.

***Corresponding Author's** Email: jams@gurkit.com

Received date: December 08, 2021; **Accepted date:** December 22, 2021; **Published date:** December 29, 2021

DESCRIPTION

Protein kinase A (also known as cyclic AMP-dependent protein kinase or A kinase) is an enzyme that adds phosphate groups to proteins covalently. Protein kinase A's activity is regulated by changes in cyclic AMP levels within cells, which is a unique feature (hence its alias as the cyclic AMP-dependent protein kinase). As a result, this enzyme serves as an end effector for a number of hormones that work *via* the cyclic AMP signalling pathway. To put it another way, the cyclic AMP second messenger system ultimately causes protein kinase A to be accountable for almost all cellular reactions. Because of their ability to phosphorylate a large number of proteins, protein kinases play an important role in intracellular signalling. Protein kinase A is a kinase that acts on extremely specific regions within cells. The interaction of type I regulatory subunits with proteins known as A kinase anchoring proteins leads in spatial targeting (AKAPs). Protein kinase A localizes with a variety of substrates, including ion channels, cytoskeletal components, and centrosomes, according to a vast number of different AKAPs.

Structure of protein kinase

Protein kinase is a type of enzyme that regulates the activity of proteins. A holoenzyme is a heterotetramer made up of two subunit types: Subunit of catalysis: The active site of the enzyme is found in this subunit. It also has a domain that binds to ATP (phosphate supply) and another that binds to the regulatory subunit. Subunit of regulation: To form a homodimer, two molecules of this subunit bind in an antiparallel orientation; for type I subunits the attachment is covalent *via* disulfide bond. The homodimer subunit also contains two domains that bind cyclic AMP, one that interacts with a catalytic subunit, and one that acts as a substrate or pseudosubstrate for the catalytic subunit. Regulatory subunits may have biological functions in addition to influencing catalytic subunit activity.

Importance of protein kinase

Protein kinases are intracellular enzymes that affect cell growth and proliferation as well as the initiation and modulation of immunological responses. Protein kinases are phosphotransferases that phosphorylate serine, threonine, or tyrosine residues in cells by binding phosphate to their side chains. In the first phase of intracellular immune cell signalling, kinases are required. Kinases, for example, bind to the intracellular component of receptors on the cell surfaces of T and B lymphocytes, and when these receptors are activated by their extracellular ligands, they initiate intracellular signalling cascades within these cells. Protein kinases transfer phosphate (P) from ATP to a serine, threonine, or tyrosine residue in a protein.Phosphorylation causes a molecular change, allowing proteins to be directly activated or deactivated. Protein phosphatases, on the other hand, catalyse the removal of the -phosphate from the target protein, inhibiting kinase activity and reversing the phosphorylation process.

Function of protein kinase

Protein kinases are important in the activation of cells. Protein kinases attach a phosphate group to certain amino acid residues in proteins and peptides from the ATP gamma site. Phosphorylation of proteins has been linked to a number of physiological functions, including glucose absorption, signalling, epigenetic changes, and cell cycle development.