Abstract

Extracellular signal molecules are recognized by membrane receptors on the surface of eukaryotic cells. Receptors transmit the signal into the intracellular space where activation of the concrete enzymes occurs. Activated enzymes may be protein kinases that phosphorylate the substrate proteins corresponding to the requirements for specific recognition by a protein kinase. Substrate proteins may be structural proteins and enzymes, which in turn transmit the signal or directly affect the physiological processes of the cell. The protein kinase family accounts for ERK1 and ERK2 (Extracellular signal-regulated kinase 1 and 2), enzymes which affect cell growth, cell cycle and numerous other physiological processes of the cell. Protein kinases are dynamic molecules, which undergo a series of conformational changes during their catalytic cycle and whose stability and function are affected by conformational changes. Conserved amino acid residues carry out the function of protein kinases. These factors are also involved in interactions with protein substrates and regulatory proteins, and are responsible for specific function of protein kinase.