

Two component systems were traditionally considered as main phosphorylation systems of bacteria involved in cell signalling. Recently, attention focuses increasingly on bacterial eukaryote-like Ser/Thr protein kinases (eSTKs). These protein kinases are structurally similar to their eukaryotic counterparts. Some eSTKs possess additional domains such as extracellular PASTA domains that were discovered in a variety of gram-positive bacteria. It has been proved that these domains can act as sensors for unlinked peptidoglycan fragments. However, majority of environmental signal molecules still remains unknown. eSTKs phosphorylate a broad spectrum of substrates including proteins involved in various cell processes such as virulence, cell wall biosynthesis, cell division, and central and secondary metabolism. Cross talk between eSTKs and two component systems also occurs. In this thesis, the current knowledge about eSTKs and their significant substrates in different bacterial species is discussed.