

Abstract:

Interaction of the cell wall and plasma membrane is essential for proper cell functioning as it affects, for example, cell growth, water relations or pathogen penetration, and provides protection against external factors. This interaction may take the form of signal exchange or component transport and its necessary prerequisite is the contact between the two structures. The contact is ensured not only by turgor pressure but also by their direct connection. Experimental evidences have long been known to show that this connection indeed exists - for example, Hechtian strands that are visible in the plasmolyzed cell. Another example is band plasmolysis in cells of the endodermis and exodermis with the Casparian strips, where the plasma membrane is still attached to the cell wall at the site of the strip. This attachment contributes to the protective feature of the apoplastic barrier and allows maintaining it even during plasmolysis. The anatomic aspects of the phenomenon have long been investigated, but specific proteins providing this interaction at the molecular level have not yet been experimentally confirmed. The aim of the bachelor thesis is to summarize recent findings about the mechanisms ensuring the physical connection (adhesion) between the plasma membrane and the cell wall in the plant cell. Protein with RGD motif, WAK (wall-associated) kinases and arabinogalactan proteins are among the candidate proteins that could provide this link.

Key words:

Interaction, Hechtian strands, Casparian strips, plasma membrane, CASP, WAK kinase, arabinogalactan protein