

DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)

During their life cycle, plants are usually exposed to different environmental factors: abiotic (extreme temperature, a lack or excess of water, too low or too intense light) and biotic (pathogens, parasites). Plants have developed various acclimation strategies to counteract the negative effects of abiotic stresses (including extreme temperature stress) and the cell membrane is an important element in these strategies. During acclimation to changing temperature conditions, modifications in the cell membrane fluidity are connected with changes in the proportion of unsaturated fatty acids, which results in a rearrangement of the membrane structure and its properties. Membrane properties may also be modified by incorporating various components into their structure, for example, tocopherols or sterols. Many of the physiological phenomena that occurs in cells is controlled by multidirectional effect of hormones on the metabolism of plants, which is also the basis for the adaptability of organisms in order to function in changing environmental conditions. Brassinosteroids (plant steroid hormones) belongs to the group of hormones that are involved among others in regulating of plant growth and plant metabolism in stressful conditions. Their function in plants is still being explained and relatively little is known about their impact on the plant cell membrane properties. Considering the role of membranes as the first cellular line to react to changing temperatures, the aim of the proposed project is to broaden the knowledge about changes in physicochemical properties of cell membranes during the plant acclimation to low/high temperature and the influence of brassinosteroids on these properties. Studies of brassinosteroid content in cell membranes will also be performed. The object of studies will be barley – species of economic importance. Results obtained in the project will enrich knowledge about mechanisms of action of brassinosteroids - the hormones that have perspectives to be used in agriculture for protection of crop plants against environmental stress.