

ABSTRACT

The transition from vegetative to reproductive phase is called flowering. The right timing of flowering is essential for successful reproduction of plants. Flowering is controlled by many external and internal factors including day length or photoperiod. The photoperiod is perceived in leaves, where the mobile signal called „florigen“ is produced. It is thereafter transported from the leaves to the stem apical meristem where flowering is induced. Photoperiodic regulatory pathway involves genes whose mutual interactions and gene interactions with other pathways determine timing of flowering.

Tuberization of potato plants (*Solanum tuberosum* L.) is important morphogenetic process taking place in underground stem (stolon), where storage organs - tubers - are formed. Precise timing of tuberization is important for successful overwintering, and vegetative reproduction of potato. Onset of tuber formation is governed by external and internal conditions especially temperature, nutrient availability and photoperiod. The process is stimulated by short day conditions. Photoperiodic pathway controlling tuberization has several common components with photoperiodic pathway controlling flowering, including the participation of mobile signal - „tuberigen“. Recent findings on proteins involved in photoperiodic regulatory pathway controlling tuberization and flowering indicate that they are analogous, although some of them may have different/ opposite functions.

This bachelor thesis is based on literature review focused on photoperiodic pathway controlling flowering of *Arabidopsis thaliana* and photoperiodic pathway controlling tuberization of potato. It is aimed to search for identical and different features of these processes and summarize the functions of proteins encoded by the members of the florigen/tuberigen gene family.