

Abstract

The orchid family (*Orchidaceae*) belongs to one of the largest and most diverse families of flowering plants. Orchids undergo a complex developmental cycle that includes a mycoheterotrophic stage of protocorm after seed germination. The hypothesis of this work is that within the orchid mycorrhizal symbiosis, the developing heterotrophic protocorm can be supplied with enough organic carbon and energy not only from soluble carbohydrates, but also from amino acids of fungal origin. The aim of the work is to find out which selected amino acids and other substances can serve as a significant source of carbon and energy for protocorms of the orchid *Dactylorhiza majalis* using axenic *in vitro* experiments. According to the results of this thesis, not every tested amino acid can replace the exogenous soluble carbohydrate. However, both glutamic acid and aspartic acid, which strongly supported the growth of protocorms, could play an important role in carbon transfer. Casein enzymatic hydrolysate was also a relatively good source of carbon for protocorms. It is therefore possible that some exogenous amino acids could serve orchids not only as a source of nitrogen, but also as a significant source of carbon.

Key words: orchid mycorrhiza, *Dactylorhiza majalis*, amino acids, pyruvate, carbon flow, mycotrophy