

# Abstract

Lot of attention is paid to biological control agents of plant pathogens as it will reduce the amount of pesticides used in agriculture. *Pythium oligandrum* oomycete is already used commercially in the form of watering and spraying. In this work the properties of other isolates were characterized, and the metabolic changes were studied in plants of oilseed rape (*Brassica napus* subsp. *Oleifera*), whose seeds were treated with preparates based on *Pythium oligandrum*.

In the first part of the thesis the properties of compounds secreted by isolates of *Pythium oligandrum* were tested. The amount of phenolic substances and the activity of endoglycosidase endo- $\beta$ -1,3-glucanase, cellulase, chitinase as well as proteases were measured to assess the ability of oomycete *Pythium oligandrum* mycoparasitically protect the plant. Substances, especially oligandrin, which during interaction with the plant are responsible for “priming”, have been observed, enabling the plant to respond rapidly to pathogen infection through systemic plant resistance. Differences between individual isolates also manifested themselves in electrophoretic separation in the protein representation.

In the second part of the work, the effect of rapeseed seed treatment with isolates of *Pythium oligandrum* on plant metabolism was monitored. While many properties of rapeseed plants were not affected, the effect of the treatment was manifested in the activity of NADP dependent dehydrogenases, namely shikimate dehydrogenase, which is involved in the synthesis of aromatic amino acids and phenolic substances. The number of phenolic compounds, the activity of some antioxidant enzymes such as superoxide dismutase and peroxidases were increased compared to untreated plants control.

With a narrower selection of isolates, the effect of seed treatment on plant metabolism after exposure to the pathogen *Verticillium longisporum* was measured. Metabolic differences were manifested in the activity of both antioxidant enzymes and glycosidase.

(In Czech)

Key words: biological control agents, *Pythium oligandrum*, rapeseed