Growth control of the fungi *Pythium* spp. and *Thielaviopsis* spp. through volatile compounds of the essential oil of *Eucalyptus staigeriana*.

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Pythium spp. and *Thielaviopsis* spp. fungi are the main cause of root rot in various cultures, including lettuce crops (1,2). High humidity and mild temperatures are the ideal conditions for the development of this disease, which causes great economic losses (3). The use of chemicals to combat plant diseases presents environmental and health risks to the rural worker and consumer. An alternative to control plant pathogens is the use of plant metabolites, such as essential oils, which have antifungal action by inhibiting the mycelial growth and spore germination (4). The aim of this study was to evaluate the effect of volatile compounds of the essential oil (EO) of *Eucalyptus staigeriana* in the control *in vitro* of *Pythium* spp. and *Thielaviopsis* spp. Leaves of *E. staigeriana* were harvested from plants located in Caxias do Sul - Brazil and the EO was extracted by steam distillation from dried plant leaves for 1 hour and analysed by GC/MS for chemical identification. The fungus *Pythium* spp. was isolated from a hydroponic system for lettuce production and the fungus *Thielaviopsis* spp. was isolated from hydroponic cultivated arugula roots. The major constituents from EO of *E. staigeriana* were geranial (21.36%), limonene (18.91%), 1,8-cineole (18.28%) and neral (15.51%). For the evaluation of volatile compounds, *Pythium* spp. mycelial discs of 5 mm (Ø) were placed into Petri dishes of 9 cm (Ø) with Potato-Dextrose-Agar medium, while for *Thielaviopsis* spp. it was used Carrot-Potato-Dextrose medium, and both were maintained at 25°C in a 12 hours photoperiod. The EO was emulsified with Tween 20 in the concentrations: 0%, 12.5%, 18% and 25%. At the same time that the fungus was inoculated, the cover of each Petri dish had a small piece of cotton fixed on it, in which was applied a 100 µL of each (EO) concentration. The Petri dishes were sealed with plastic film to keep the volatiles inside. The radial mycelial growth of the colonies was measured from the 3rd to the 14th days. On the 7th day half of the plates had its piece of cotton removed and received a new piece with EO applied with the same concentrations. After 14 days, transfer experiments were performed in order to make a distinction between the fungistatic and fungicidal effects of the essential oils on the phytopathogen. For that, discs that did not grow were transferred to PDA and their viability and growth was assessed at the 14th day. The results were similar for both fungi and it was observed some growth at one application of the concentration 12.5%. However, when it was reapplied the colonies were unable to continue their development. The concentrations of 18% and 25% applied once showed lack of mycelial growth until the 14th day, but presented growth on the transfer experiments. These results suggest that the volatile compounds of the essential oil of *E. staigeriana*, may be used in alternative control of *Pythium* spp. and *Thielaviopsis* spp.

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