



Abstract

Origanum vulgare ssp. *hirtum* Essential Oil as Inhibitors of *Fusarium* Dry Rot of Potato [†]

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Abstract: *Fusarium* dry rot on potato, caused by the fungal pathogen *Fusarium solani*, is characterized by an internal light to dark brown or black and usually dry rot of potato tubers. The disease progresses noticeably faster during the latter half of the storage season. Biological control of dry rot is an intriguing concept, but currently, no products are available commercially. It was found that the essential oil of a number Lamiaceae species, including oregano, have strong biocidal properties. A significant antifungal activity of *Origanum vulgare* ssp. *hirtum* essential oil against different phytopathogens in in vitro experiments has been demonstrated. In this study, the effect of oregano essential oil on potato tubers infected with *Fusarium solani* was evaluated. For this purpose, potato slices cut at thicknesses of 8–10 mm were inoculated with mycelium plugs of *F. solani* in the center of the slices. The oregano oil was tested using two approaches: contact and air impact. In the first approach, the essential oil was applied as an aqueous solution with a concentration range of 1–3 µg/mL on the potato tuber slices. In the second approach, the essential oil was placed in the Petri dishes with tuber slices in amounts from 5 to 50 µL without contact between them. A strong reduction in micellar growth on tuber tissue was observed at air impact during application of the essential oil in amounts of 25 µL and higher. The result showed that the *Origanum vulgare* ssp. *hirtum* essential oil shows antifungal activity against *Fusarium solani* and has the potential for application in storage rooms of potato tubers, especially during the last half of the storage season.



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