

Full Length Research Paper

Chemical composition and antifungal activity of Aleppo pine essential oil

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The composition of spine essential oil of Aleppo pine tree from Ghazaouet (Tlemcen) extracted by hydro-distillation (yield: 0.3%) was investigated by GC_MS. Twenty-two compounds, representing 93.38% of the essential oil were identified. The main constituents are caryophyllene oxide (52%), thumbergol (9%), and humulene oxide (7.2%). The antifungal activity of this essential oil against *Aspergillus flavus*, *Aspergillus niger*, *Fusarium oxysporum*, *Rhizopus stolonifer* was evaluated by the disc diffusion method.

Key words: Aleppo pine (*Pinus halepensis*), Algéria, GC_MS, antifungal activity.

INTRODUCTION

Recently, there has been an alarming increase in fungal infections, especially for immuno-compromised individuals. Among them, opportunistic systemic mycoses have been associated with high mortality rates. There is an increasing awareness amongst clinicians and microbiologists pertaining to the importance of infection caused by opportunistic fungi (Sunita and Mahendra, 2008; Sadeghi-Nejadt et al., 2010). Many drugs to treat fungal diseases have been developed over the years. Yet, there is a limited number of efficient ones, due to the general undesirable side effects and low sensitivity against the fungi (Sadeghi-Nejadt et al., 2010).

On the other hand, opportunistic molds are able to colonize diverse substrates including food. These microorganisms can cause a high degree of deterioration in foods and can be responsible for considerable economic losses. Furthermore, they can act as potential producer of toxic mycotoxins, which are potential damaging agents to consumer's health (Evandro et al., 2005). To retard molds growth and mycotoxin production, chemical preservatives are used. Currently, there is a

strong debate about the safety aspects of chemical preservatives since they are considered responsible for many carcinogenic and teratogenic attributes as well as residual toxicity (Omidbeygi et al., 2007). This situation led scientists to search for new antimicrobial agents.

Traditional medicinal plants can be used for their antifungal activities. The antimicrobial properties of these plants essential oils have been recognized and experimentally evaluated for many years. Moreover they found applications agents in various fields, including pharmacology, pharmaceutical botany, phytotherapy, medical and clinical microbiology, food preservation, etc (Maridars, 2009)

Pinus halepensis (Pinaceae) is one of the many trees that are known for their medicinal properties (Delille, 2007) as well as for their economical importance (Kurose et al., 2007). To the best of our knowledge, few studies were achieved to determinate the bioactive compounds of Mediterranean *Pinus* species (Hmamouchi et al., 2001; Lahlou, 2004).

The aim of this study was to evaluate the sensitivity of some moulds strains to essential oil of *P. halepensis* obtained from the area of Ghazaouet (North-west of Algeria) for a possible future use as alternative antimould compounds.

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