

## Phytochemical Characterization of the Seed Oil of *Pinus Halepensis*



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### Keywords

oil

Anti-tumorale Activity

natural remedies

### NWFP

Aromatic & Medicinal Plants

### Scale

Global

National

### Context

The massive use of antibiotics has led to the emergence of antibiotic resistance, which is a major public health issue. Several bacteria have developed multidrug resistance. They are included in the category of pathogens acquired in the community and in the hospital. This led to a strong demand for new antibiotics against pathogens and an interest was developed by the scientific community for the use of medicinal plants with antimicrobial properties.

### Objective

We have projected for the first time to study the impact of geographic variation and environmental conditions on the chemical composition, the antioxidant activities as well as the antitumor activity of two of *Pinus halepensis* Mill. Oils provenances, distributed under different ecological conditions in Tunisia.

### Results

*Pinus halepensis* Mill. oil collected from Kasserine was characterized by a high percentage of palmitic acid (5.73%) which makes this oil freeze at a low temperature. On the other hand, phenolic contents showed significant correlations with antioxidant activity. In addition, the anti-metastatic of fatty acids from *Pinus halepensis* Mill. oil were investigated in U87-MG cell lines. The fatty acid extract showed significant inhibitory activity on cell proliferation and cell cycle progression in U-87 MG cell lines. These results give credence to the therapeutic potential of this plant against cancer. In consideration of potential utilization, detailed knowledge on the composition of *Pinus halepensis* Mill. oil is of major importance. The diversity of applications to which *Pinus halepensis* Mill. oil can be put gives this plant great industrial importance.



## Recommendations

One of the main findings in this study was that the selected Tunisian *Pinus halepensis* oil. medicinal herbs demonstrated good antioxidant activity, contained significantly good amounts of phenolics compounds probably with anti-proliferative properties. Based on the results described above, we can speculate that Tunisian *Pinus halepensis* oil. Medicinal plants have high health prevention potential and could be considered in the formulation of new food products and dietary recommendations.



## Impacts and weaknesses

Despite some current deficiencies in experimental or clinical analysis, medicinal plants with anti-tumoral characteristics are effective and so are candidates for future therapeutic agents. We suggest that emphasis on identification and testing of active ingredients in research in the future will assist better understanding of their anti-tumoral activity.



## Future developments

While plant agricultural biotechnologies have come to fruition due to the implementation of novel molecular marker-assisted crop breeding and genetic engineering, it is important to distinguish the many considerable achievements from several remaining questions and to point out future R&D needs.



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### Further information

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#### About INCREDIBLE Project

INCREDIBLE project aims to show how Non-Wood Forest Products (NWFP) can play an important role in supporting sustainable forest management and rural development, by creating networks to share and exchange knowledge and expertise. 'Innovation Networks of Cork, Resins and Edibles in the Mediterranean basin' (INCREDIBLE) promotes cross-sectoral collaboration and innovation to highlight the value and potential of NWFPs in the region.



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