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Management

**Master's Thesis**

**The efficacy of conventional postharvest treatments on  
*Rosmarinus officinalis* shelf life**

**Constantinos Stefanou**

**Limassol, May 2022**



CYPRUS UNIVERSITY OF TECHNOLOGY  
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MANAGEMENT  
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# Approval Form

Master's Thesis

## **THE EFFICACY OF CONVENTIONAL POSTHARVEST TREATMENTS ON *ROSMARINUS OFFICINALIS* SHELF LIFE**

Presented by

Constantinos Stefanou

Supervisor:

Signature \_\_\_\_\_

Member of the committee:

Signature \_\_\_\_\_

Member of the committee:

Signature \_\_\_\_\_

Cyprus University of Technology

Limassol, May 2022

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The approval of the thesis by the Department of Agricultural Sciences, Biotechnology and Food Science does not imply necessarily the approval by the Department of the views of the writer.

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## ABSTRACT

*Rosmarinus officinalis* is a well-known medicinal plant, used in the food industry as herb or a natural preservative, however, limited information for its postharvest preservation is available. This study aims to find a natural way of preserving fresh rosemary in order to increase shelf or/and storage life. Rosemary batches were dipped in distilled water (control), H<sub>2</sub>O<sub>2</sub> 10 g L<sup>-1</sup> or 20 g L<sup>-1</sup> for 1 min, ethanol 30% or ethanol 50% for 10 s or subjected to low O<sub>2</sub> for 30 min or for 1 h. Quality related parameters were observed during or at the 10<sup>th</sup> day of storage at 6 °C, including sensory evaluation, respiration rate, phenols, ascorbic acid, antioxidants, flavonoids and natural microflora. Application of ethanol 50% increased weight loss on the 10<sup>th</sup> day, whereas, on the 2<sup>nd</sup> day, application of low O<sub>2</sub> (30 min or 1 h) had higher weight loss rate in comparison to the other treatments. Respiration rate increased with the ethanol 30% application in comparison with the rest of the treatments (except low O<sub>2</sub> for 1 h). Moreover, ethanol 50% had the lowest respiration rate from all seven treatments on the 10<sup>th</sup> day of storage. Total variable counts of rosemary were significantly lower with the 30% or 50% ethanol application compared to H<sub>2</sub>O<sub>2</sub> 10 g L<sup>-1</sup>, on the 10<sup>th</sup> day of storage. Furthermore, ethanol (30% and 50%) application decreased yeasts and molds in comparison with the other treatments. In addition, the application of low O<sub>2</sub> 30 min treatment led to the most marketable and aromatic product after the control. Overall, the low O<sub>2</sub> 30 min treatment appears to be the best postharvest method for the preservation of fresh rosemary followed by H<sub>2</sub>O<sub>2</sub> 10 g L<sup>-1</sup>. Further investigation for postharvest methods in herbs could include ozone exposure, high CO<sub>2</sub>, temperature and use of essential oils.

**Keywords:** Rosemary, Postharvest quality, preservation, hydrogen peroxide, ethanol, low oxygen (hypoxia)