

Influence of ambient air drying of *Rosmarinus officinalis* L leaves on the essential oil extraction yield

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1. Introduction

Rosmarinus officinalis is an aromatic medicinal plant native to the Mediterranean basin [1]. It is widely known for its many applications in the pharmaceutical field of the growing interest in its therapeutic properties. This plant is considered one of the most important sources of volatile bioactive compounds such as essential oils (EO) [2].

An EO is defined as a hydrophobic liquid of volatile odoriferous compounds secreted by a plant. This complex mixture, made up of various molecules, is obtained by hydrodistillation or steam distillation [3].



This study aims to follow the drying kinetics of *Rosmarinus officinalis* L. leaves in the ambient air drying and to evaluate its impact on the essential oil extraction yield.

2. Methods

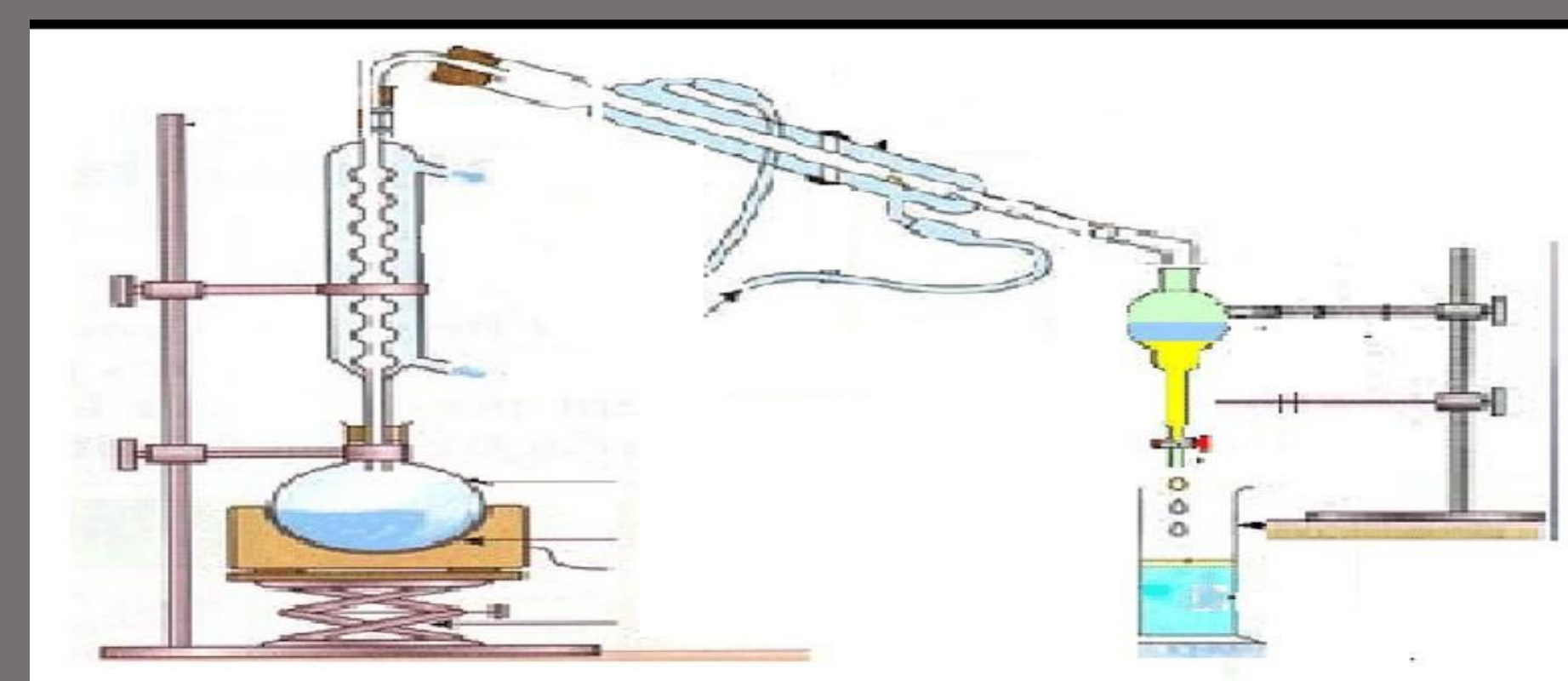
Rosemary leaves were harvested at the USTHB at the flowering stage.



drying the plant in the open air for seven days



Rosemary essential oil



Extraction of essential oil by Hydrodistillation

3. Results and discussions

Drying kinetics study

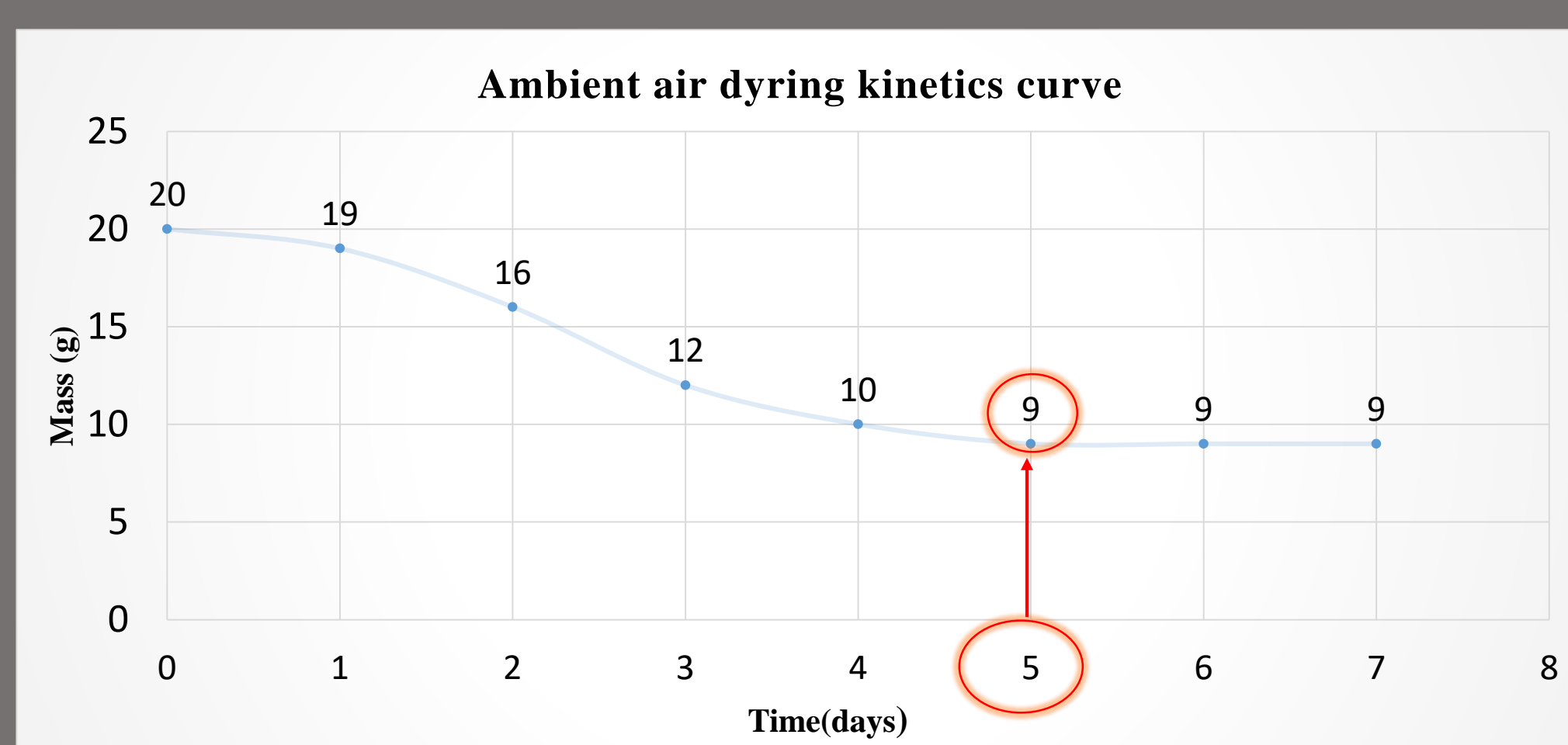


Figure 1: Variation in *Rosmarinus officinalis* plant weight loss as a function of drying time

Extraction results after ambient air drying

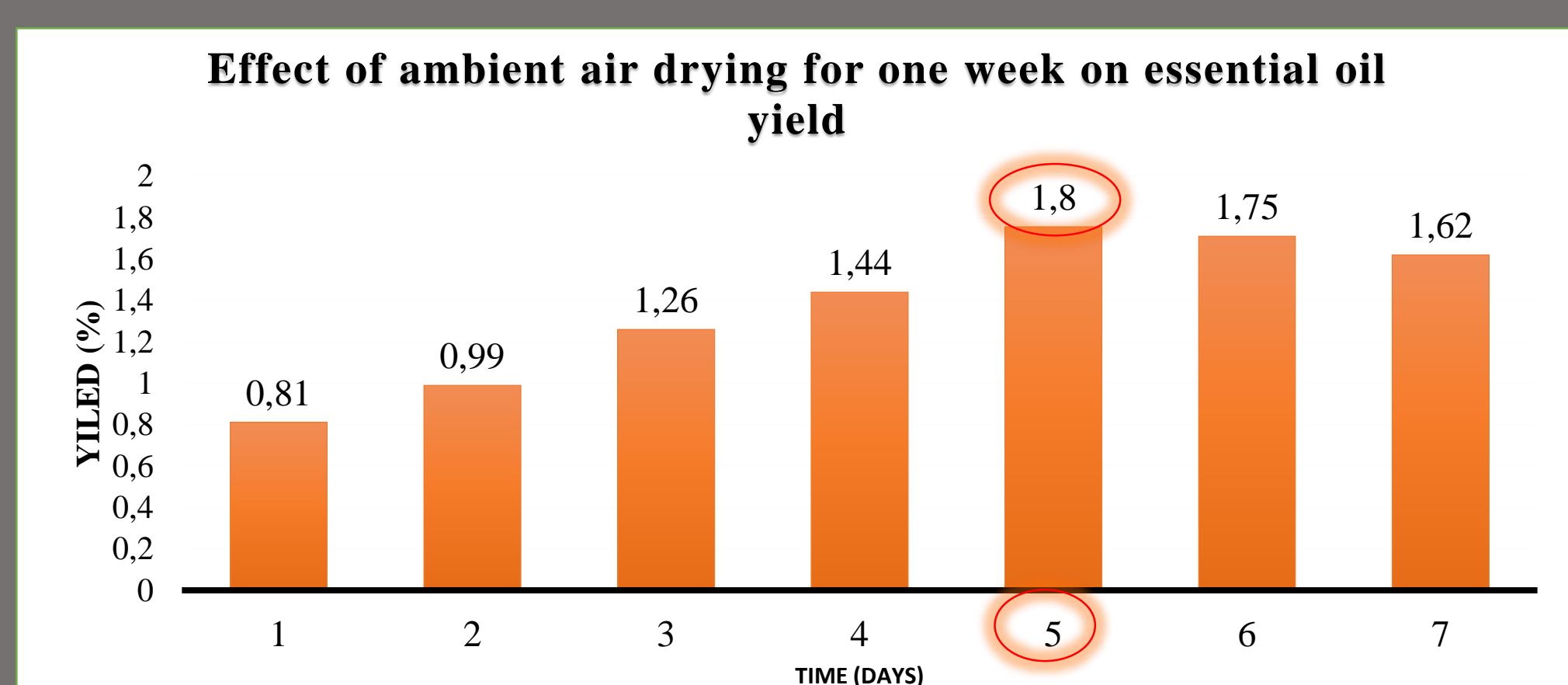


Figure 2: Histogram representative of the drying effect on the rosemary EO yield

Comparative study

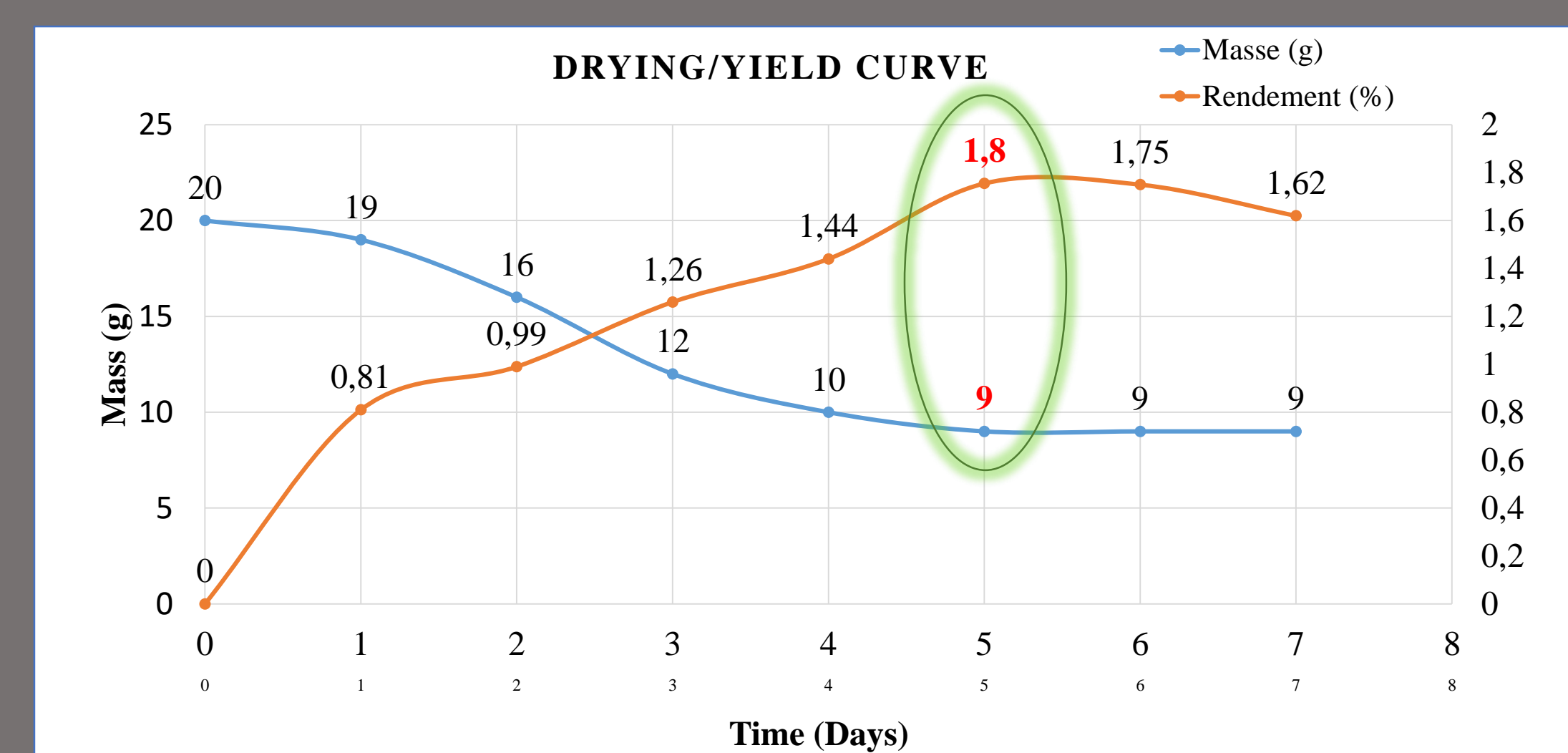


Figure 3. variation in yield of essential oils of *Rosmarinus officinalis* L. according to weight loss



- The following mass of rosemary leaves while drying for a week show that the moisture content of the plant material gradually decreases and then becomes practically constant. For weight stability, it took five days.
- the variation in essential oil (EO) yield as a function of the drying time shows that there is an increase in the EO content, this increase reaching a maximum value of about 1.8% when the drying period is five (5) days. After five days, there is a decrease in the EO content.

4. Conclusion

- The rosemary essential oil yield is influenced by the drying time, a remarkable increase in yield until the fifth day then a decrease.
- This increase during the first days of drying can be explained by physiological activity (enzymatic reactions), this is an important biological phenomenon. The biosynthesis of essential oils continues and accelerates after the harvest of plant material in response to water stress. Its decrease after five days of drying is due to the reduction or cessation of the enzymatic activity causing the death of cells following strong dehydration.

5. References

- [1] Neffati M, Najaa H, Mathé A. « Medicinal and aromatical plants of the world ». Springer, ISSN 2352-6831, Vol.3, p.115-124.
- [2] Khare C.P. « Indian medicinal plants ». Springer, ISBN : 978-0-387-70637-5, p. 557-558.
- [3] Xavier F, Chemat F. « La chimie des huiles essentielles: Tradition et innovation ». Vuibert, paris octobre 2012. ISBN: 978-2-311-01028-2, p. 10.