biology and life sciences forum

MDPI

Proceedings

Evaluation of Antioxidant Activity of Alcoholic Beverage Mead Produced from Greek Chestnut Honey †

Achilleas Atzemopoulos [1], Fotini-Paraskevi Vardaka [1], Marinos Xagoraris [2] and Eleftherios Alissandrakis [1,3] *

[1] Laboratory of Quality and Safety of Agricultural Products, Landscape and Environment, Department of Agriculture, Hellenic Mediterranean University, Stavromenos PC, 71410 Heraklion, Crete, Greece
[2] Laboratory of Chemistry, Department of Food Science and Human Nutrition, Agricultural University of Athens, 75 Iera Odos, 11855 Athens, Attica, Greece
[3] Institute of Agri-Food and Life Sciences Agro-Health, Hellenic Mediterranean University Research Center, Stavromenos PC, 71410 Heraklion, Crete, Greece
* Correspondence: ealiss@hmu.gr
† Presented at The 3rd International Electronic Conference on Foods: Food, Microbiome, and Health - A Celebration of the 10th Anniversary of Foods' Impact on Our Wellbeing. 1-15 October 2022

1. Introduction

Mead is a yeast-derived alcoholic beverage made from the fermentation of honey, also called "honey wine" or traditionally "hydromeli". Mead has never received the reputation it deserves, although it is a product derived from the most famous natural sweetener. However, it seems to have been in extremely high demand in recent years as it incorporates organoleptic characteristics like wine. Mead contains many biologically active substances, including phenolic compounds, derived from honey. The aim of this study was to evaluate and correlate the antioxidant activity of mead with the chestnut honey from which it is derived. For this purpose, a fermentation of chestnut honey was performed with the Belgian yeast strain M12 *Saccharomyces cerevisiae* var. *diastaticus* for 30 days at 19 °C. Antioxidant activity was estimated using the DPPH assay, and results were expressed as mmol Trolox equivalents kg^{-1}. In chestnut honey the scavenging effect of the DPPH radicals was 6.80±0.04 mmol Trolox kg^{-1}, while mead was slightly better in eradicating radicals with inhibition of 7.67±0.05 mmol Trolox kg^{-1}. Even though honey was diluted in a 1:2 ratio with water before fermentation, the final product showed a higher rate of antioxidant activity than honey. This paradoxical effect is probably because, during fermentation, compounds which can react with the radicals of the DPPH assay are probably formed [1,2]. Also, the yeast strain employed produces volatile phenols which can react with the radicals of the DPPH assay [3]. Our results demonstrate that mead has a particular scientific interest due to its antioxidant properties. Further research is needed on the effect of the yeast strain and fermentation conditions as an effort fora deeper investigation of the understudied topic of Greek mead.

References

1. Adamenko, K.; Kawa-Rygielska, J.; Kucharska, A.Z.; Głowacki, A.; Piórecki, N. Changes in the Antioxidative Activity and the Content of Phenolics and Iridoids during Fermentation and Aging of Natural Fruit Meads. *Biomolecules* **2021**, *11*, 1113.
2. Zhao, Y.-S.; Eweys, A.S.; Zhang, J.-Y.; Zhu, Y.; Bai, J.; Darwesh, O.M.; Zhang, H.-B.; Xiao, X. Fermentation Affects the Antioxidant Activity of Plant-Based Food Material through the Release and Production of Bioactive Components. *Antioxidants* **2021**, *10*, 2004.
3. Paszkot, J.; Kawa-Rygielska, J. Yeast Strains and Wort Color as Factors Affecting Effects of the Ethanol Fermentation Process. *Molecules* **2022**, *27*, 3971.

Citation: Lastname, F.; Lastname, F.; Lastname, F. Title. *Biol. Life Sci. Forum* **2022**, 2, x. https://doi.org/10.3390/xxxxx

Academic Editor: Firstname Lastname

Published: date

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.