



Novel Kombucha Beverage from Olympus Mountain Tea (*Sideritis scardica*) Sweetened with Thyme Honey: Evaluation of Functional Properties

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Background: The consumption of certain beverages to prevent chronic diseases and maintain good health has now been recognized worldwide. Despite the availability of various beverages in the market with functional properties, there is a need to search for new combinations and ratios of raw materials to improve the bioactivity in the final products. In this study, a new version of kombucha is produced with Greek raw materials. The tea (*Camellia sinensis*) is replaced with Olympus Mountain tea (*Sideritis scardica*), and the sugar is replaced with thyme honey. This work aims to evaluate the effect of kombucha fermentation on the functional properties of this new version of kombucha with Olympus Mountain tea with honey (OMTWH).

Methods: The number of yeasts and acetic acid bacteria (AAB) was measured just after inoculation and at the end of the fermentation (ISO 21527-1:2008). Vitamin C (Spectrophotometric method) and B-complex (HPLC), total phenolic (Folin-Ciocalteu), α -amylase, α -glucosidase, anticholinesterase assays (Spectrophotometric methods), and antioxidant activity (ABTS) were performed in the broth before inoculation and at the end of the fermentation.

Findings: The increase in the total count of bacteria and yeast suggests that the OMTWH is a viable substrate for supporting the proliferation of the microorganisms of the Kombucha symbiotic culture. After fermentation, a statistically significant increase in the vitamins C, B1, B2, B6, B7, and B12 content was observed ($p < 0.05$). The fermented beverage's total phenolics and antioxidant activity were significantly enhanced. Results revealed that OMTWH had a potent inhibitory activity of α -amylase, α -glucosidase, acetylcholinesterase, and butyrylcholinesterase; OMTWH fermented with a kombucha consortium exhibited even higher inhibition.

Interpretation: Kombucha fermentation can transform OMTWH into a novel beverage with enhanced functional properties.

Abbreviations: OMTWH, Olympus Mountain Tea with Honey; AAB, Acetic acid Bacteria.



- ↑Vit C
- ↑Vit B-complex
- ↑Total phenolics
- ↑Antioxidant activity
- ↑ α -amylase inhibition
- ↑ α -glucosidase inhibition
- ↑Cholinesterase inhibition

Figure 1. Schematic representation of the raw materials for the production of kombucha fermented OMTWH and the effect of the fermentation on the Functional properties of the beverage (↑ denotes enhancement compared to the non-fermented OMTWH)



Biography

Ioannis Geraris Kartelias is a businessman and researcher in the food sector. He is passionate about new ideas and projects. He graduated from the Department of Food Science and Nutrition at the Agricultural University of Athens and holds an MBA from Imperial College London. He is a PhD researcher at the University of the Aegean.

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Biography

Haralabos C. Karantonis holds a degree in Chemistry from the University of Athens (1998). He earned his M. Sc. in Biochemistry (2000) and his PhD in Chemistry (2004) from the Department of Chemistry at the University of Athens. After a post doc at the (2005-2007) he joined the department of Nutrition and Dietetics at the Harokopio University (2004), serving as lecturer in Biochemistry (2004-2008). Since 2009 is a professor in Food Chemistry at the department of Food Science and Nutrition at the University of the Aegean. His Research interests are in Food Chemistry, Food analysis of bioactive molecules, and food formulation. He was/is leadership of 9 national research programs with a total budget of over 2 million Euros. He is a supervisor Ph.D. MSc Theses. He has served as Head of the Department of Food Science and Nutrition of the University of the Aegean for 4 years.

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