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I International Conference on Research for Sustainable Development in Mountain Regions

Book of Abstracts

INSTITUTO POLITÉCNICO DE BRAGANÇA

Centro de Investigação de Montanha

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United Nations Educational, Scientific and Cultural Organization

UNESCO Chair in Sustainable Mountain Development

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Table of Contents

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Sy08O06

Bioactive properties of dairy beverages functionalized with pure ergosterol and mycosterol extracts: a comparative study with phytosterol counterparts

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Agaricus bisporus L. is the most consumed mushroom worldwide exhibiting a high content of ergosterol in its sterol's fraction (~90%). Some studies have demonstrated the health benefits of this molecule related to its antioxidant, antitumor and also hypocholesterolemic effects, similar to the ones exhibited by phytosterols. Functional foods containing phytosterols, or their derivatives, can be found at commercial level bearing the European Food Safety Authority approved health claim "able to lower cholesterol levels in serum". Therefore, this work aims to present the use of mycosterols as an innovative alternative to phytosterols. *A. bisporus* bioresidues obtained from mushroom's industry were used to obtain mycosterols by ultrasound assisted extraction. Pure ergosterol and the obtained mycosterol extracts were added to dairy beverages, in a similar amount to the one used in the commercial ones incorporated with phytosterols. All the beverages were analysed immediately (T0) and after seven days of storage at 4ºC (T1) regarding nutritional parameters, antioxidant activity and cytotoxic properties against human tumor cell lines and a non-tumor porcine liver primary culture. The beverages functionalized with the mycosterols extract revealed an antioxidant activity similar to the commercial beverages with phytosterols. However, beverages with pure ergosterol revealed twice this antioxidant activity. Moreover, only the samples functionalized with pure ergosterol or the mycosterols extract have shown an increase in the antioxidant activity from T0 to T1, meaning that the compound/extracts were able to protect the dairy drink from oxidation, increasing the product shelf life. Samples with pure ergosterol also revealed the highest cytotoxicity for tumor cell lines, while the beverages with phytosterols showed the lowest activity with no significant differences between T0 and T1. All the samples revealed a similar nutritional composition, and none of them revealed toxicity for normal cells. Studies on the hypocholesterolemic effects of the developed beverages are being carried out.