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Effect of rosemary (*Rosmarinus officinalis* L.) supplementation on fresh cheese: Physicochemical properties, antioxidant potential, and sensory attributes

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Abstract

Rosmarinus officinalis L. leaves can be valorized by their uses in the production of healthy foods. Rosemary powder and its lyophilized ethanolic extract at different concentrations (g/100 g) were used for the formulation of fresh cheeses: powder cheeses (B: 0.25%, C: 0.5%, D: 0.75%), extract cheeses (E: 0.25%, F: 0.5%) and control cheese (A: 0%). The ethanolic extract was obtained under the optimum conditions of microwave-assisted extraction (MAE) using response surface methodology (RSM) coupled with a Box–Behnken design (BBD); the optimum conditions were as follows: ethanol concentration 78.162%, microwave power 351.825W, ratio of solvent to raw material 101.623:1, and extraction time 122.648 s. Physicochemical parameters (pH, proteins, fat) of the formulated cheeses were not affected by this supplementation but the plant extract improved phenolics content and antioxidant capacity when compared to the control cheese. A correlation between physicochemical parameters, antioxidant activity as well as the sensory characteristics was carried out using principal component analysis (PCA). Cheeses C; D and F were most appreciated (60%–80%) by the panelists.

Practical applications

Rosmarinus officinalis L. is an evergreen branched and bushy shrub, easy to plant by cuttings, with a relevant commercial interest. It is rich in phenolic compounds which are well known for their potential diversified properties and applications. This work demonstrated the possibility of exploiting the optimized microwave-assisted extraction (MAE) technique to obtain, in short time, these valuable antioxidants from rosemary leaves. Among the rosemary applications in foods, are leaves (powder, ethanolic extract) that were incorporated in fresh cheese formulations to provide a distinctive taste, aroma and to act as flavor enhancer for better acceptability by the consumers. The success of these fortified-cheeses is explained by their health benefits (high phenolic contents with high antioxidant capacity) and hedonic properties that are appreciated by 60%–80% of panelists.

