

Development of A High Added-Value Healthy Spread by Valorizing Olive Oil Production Residue

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Abstract

Olive oil production is an important Mediterranean agricultural activity, considered as one of the major driving forces of the Greek economy. Olive oil is typically produced by mechanical extraction; initial pressing process was replaced by the continuous centrifugation process, including a three-phase and later a two-phase system. Application of a patented cold oil pressing machine resulting in improved oil yields and quality characteristics could significantly offer. By using this patented machine for the extraction of olive oil, olive paste (residue) consisting mainly of pulp is also separated from olive pit and skin. The usual practices in olive oil by-products management in Greece include the production of olive pomace oil, the use as additives in animal feeding, as combustible biomass and mainly the direct disposal into environmental systems without any pretreatment. Since the residue of the patented machine contains only olive pulp and is also considered a valuable source of phenolic compounds, we propose its reuse in order to produce high added-value food products. Olive oil (using Koroneiki cv. Olives) was cold extracted using the patented cold oil pressing machine and the residue (approximately 70%, pit and skin-free) was used for the product development. The olive residue was debittered before its reuse by application of High pressure technology (200MPa-20°C-15min). The formulation of the high added-value healthy spread included grinded olive residue (50%) and honey (25%), enriched with proteins (24.5%) derived from grinded nuts (hazel, almond, pumpkin and sunflower seeds). Citric acid (0.5%) was also added to fix pH value to 3.9. In-pack thermal treatment at 80-100°C followed, to assure food safety and shelf-life extension. Quality parameters such as color, water activity, moisture, pH, ash, total fats, proteins, and dietary fibers, the antioxidant potential including total phenolic compounds content and antioxidant activity as well as the sensory evaluation of the olive spread were determined. Microbiological growth in terms of total aerobic bacteria and the molds/yeasts was also tested. The results showed that the proposed olive spread product had texture similar to peanut butter and high content of proteins, dietary fibers, essential fatty acids and phenolic compounds. Therefore, it has considerable potential to be consumed as a healthy spread.

Furthermore, the valorization of olive residue significantly affects the environmental impact of olive oil production, minimizing the most important olive oil production drawback.

Keywords: olive oil residue, valorization, spread, high phenolic content