Development of high-quality table olives using mild pre-treatment methods

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Table olives started as a tradition in the Mediterranean countries, but have, nowadays, become famous to the entire world. More specifically, table olives have become the most popular fermented product worldwide, reaching over 1.000.000 tons every year. Greece is one of the most important producers and exporters. Table olive is a really special food, with specific nutritional value and various benefits for human health. The Greek-style processing involves the direct brining of olives in salt, without any prior chemical pre-treatment for debittering. This process has many advantages regarding low energy consumption; however, the high salt content can affect human health and especially people needing low sodium diets and also the long processing time (8-10 months) required for the fermentation can be a major drawback. The aim of this work was to effectively pretreat black table olives in order to reduce the amount of salt intake and time of fermentation. Osmotic dehydration is a pretreatment method that aims to reduce food humidity by 20-50% with low energy consumption. While water escapes from the food system, solids from the osmotic solution are inserted, and the structure of food changes. Alternative osmotic agents (apple juice, glycerol, glycose and combinations of them) were studied. The osmotic dehydration process was optimized regarding various parameters, such as osmotic concentration, temperature and duration of treatment. Alternative agents led to improved water loss and also managed to succeed salt reduction and reduction of fermentation time. The osmotically dehydrated products were evaluated for their quality characteristics (color, water activity, texture). The final fermented olives were evaluated for their quality and sensory characteristics. The olive products were of superior quality and accepted by consumers.

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