

Comparative Study on Chemical Composition of Green and Black Table Olives Brines of the Endemic "Sigoise" Cultivar: Recovery of high-Added Values Compounds

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The effluents derived from the processing of table olives stand for a serious environmental problem. The study aims to valorize the brine water of table olives at different stages of ripening (green and black) of the Algerian variety Sigoise of Bejaia (East) and Mascara (West). The physico-chemical characterization revealed that these samples display have a high acid pH and salinity. The comparative study of phenolic levels exhibited showed very significant differences between the brine waters of green olives from Bejaia and Mascara, while the brines of black olives presented showed comparable levels. A high strong antioxidant potential was confirmed by DPPH ($CI_{50} = 0.35 \mu\text{g}/100 \text{ ml} - 0.50 \mu\text{g}/100 \text{ ml}$) and FRAP ($CI_{50} = 626.89 \mu\text{g}/100 \text{ ml} - 875.54 \mu\text{g}/100 \text{ ml}$) tests. Chemical screening by HPLC-DAD of the four samples identified high concentrations of hydroxytyrosol (HT) (390.4 mg/100 ml–360.8 mg/100 ml) and tyrosol (202.2 mg/100 ml–101.4 mg/100 ml). This study provided a deeper insight into the phenolic profile and the antioxidant potential of these brines.

Keywords: brines of table olives, hydroxytyrosol, phenolic compounds, antioxidant activity, Sigoise variety.

1. Introduction

Table olives correspond are currently to the most common fermented vegetable product in European countries and together with olive oil, represent an important ingredient in the Mediterranean diet.^[1] Olive growing plays an intrinsic role in this region in terms of both the agro-economic, social and environmental aspects.^[2] The treatment of table olives provides a large amount of natural antioxidants that have a major role in the prevention of multiple diseases.^[3]

The global production for the 2021/2022 season was approximately 2.846.500 tons.^[4] Most of the production is located in the European Union (EU), especially in the Mediterranean countries, mainly Spain, Greece and Italy. Other major producing

countries include Egypt, Turkey, Algeria, Tunisia, Syria and Morocco.^[5] Representing nearly 98% of the world's olive plantation, the Mediterranean region is the first international olive growing area. Algeria is one of the main countries producing table olives, with an increase in production in recent years estimated at 323.000 tons annually, representing more than 10.5% of the world's production.^[6] According to the reports of the agricultural campaign, 2020/2021, Algeria occupies the fourth class worldwide of the countries of olive groves, resulting in a harvest of 309.500 tons which covers an estimated area of 500.000 Hectares.^[7] Algerian olive growing consists of a diversified range of olive varieties. In the Oran region, the variety of the Sig plain called the Sigoise is the most representative,