



Pomological Analyses, Physicochemical Properties, Antioxidant Activities, and Microbial Inhibition of *Pistacia lentiscus* Berries During Ripening

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Abstract

Pistacia lentiscus L. belongs to the family *Anacardiaceae*. Its fruits are a source of vegetable oils traditionally consumed in Algerian and Tunisian diets. In this study, the physicochemical composition, antioxidant activity (reducing power, FRAP, CUPRAC, TAC, DPPH, ABTS, and ferrozine), and antimicrobial inhibition of *P. lentiscus* berries are determined at two periods of maturation. Pomological analyses were also evaluated. Red berries showed a preponderance in polyphenol and flavonoid content, while black berries were found to be rich in carotenoids and vitamin C. Furthermore, total sugars decreased, while all identified secondary metabolites reached their highest values at maturity. Moreover, a direct relationship between the content of phenolic compounds and antioxidant and antimicrobial activities was shown. On the other hand, analysis of the mineral composition of macro- and micro-elements indicated higher contents of magnesium, zinc, and copper in mature fruits than in immature ones, which are richer in iron. The obtained results may facilitate the selection of the most interesting harvest periods for producers and consumers and guarantee good quality berries with high nutritional values.

Keywords Red berries · Black berries · Maturation · Mineral composition · Phenolic compounds

Abbreviations

AA	Ascorbic acid
ABTS	2,20-azino-bis-(3-ethylbenzothiazoline-6-sulfonic acid) diammonium salt
BB	Black berries
β-CE	β-Carotene equivalent
CE	Catechin equivalent
CUPRAC	Cupric reducing antioxidant capacity
DPPH	1,1-diphenyl-2-picrylhydrazyl

FRAP	Ferric reducing antioxidant power
GAE	Gallic acid equivalent
MIC	Minimum inhibitory concentrations
QE	Quercetin equivalent
RB	Red berries
RP	Reducing power
TAC	Total antioxidant capacity
TRE	Trolox equivalent

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Introduction

Pistacia lentiscus L., a shrub of the genus *Pistacia* belonging to the family *Anacardiaceae*, grows wild and is found mainly in tropical, subtropical, and temperate regions (Pachi et al. 2020; Milia et al. 2021). Mastic is the best known product of this plant. It is used in daily food as a flavoring, preservative, or texture modifier in several products (Sehaki et al. 2022; Fu and Lai 2023; Svingou et al. 2023). Fruits are commonly consumed both raw and roasted (Yosr et al. 2018; Milia et al. 2021).