

Editorial

Nutritional Value and Chemical Composition of *Cichorium Spinosum*

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Wild edible greens are an important ingredient of the so-called Mediterranean diet since many centuries ago. People of rural communities used to hand-pick wild plants (called “Chorta” in Greek language) in order to prepare nutritious dishes and complement their diet. The last few decades and with people keep flowing in big cities and abandon rural areas this traditional habit started to fade and the customary Mediterranean diet was replaced by ready-to-eat and fast-food, as indicated by the modern way of living [1,2]. However, nowadays the increasing concern of consumers for the quality of their food, as well as the ever-growing scientific evidence that confirms the beneficial health effects of a balanced diet, Mediterranean diet has regained its former position in consumers’ preferences [3-5].

Cichorium spinosum is one of the most well-known and highly sought-after wild edible greens in Greece, especially in Crete Island where it is consumed in various dishes, either as raw vegetable or as pickled in time periods when it is not available. The last few years, commercial cultivation has started in order to cover market needs, while cultivation in greenhouses intends to widen the product availability throughout the year.

C. spinosum is a very nutritious leafy vegetable, with high content in water (88.7-93.7%), and low fat (0.2-0.4 g/100 g fw) and energy content(23.8-36.3 kcal/100 g fw) [6]. Nutritional value is highly dependent on growth conditions and ecotype, with a high heterogeneity being observed among wild populations [7]; however, no significant differences have been observed between commercial products where growing conditions can be manipulated, especially for closed environment growing systems [8]. Free sugars are mainly composed from glucose (0.14-0.69 g/100 g fw), fructose (0.05-0.5 g/100 g fw) and sucrose (0.18-0.60 g/100 g fw) with great variation among the various ecotypes regarding the sugar composition [8]. The edible parts of the plant are a source of α - and δ -tocopherols (0.13-2.00 and 0.22-2.00 mg/100 g fw, respectively), ascorbic acid (0.06-2.79 mg/100 g fw), Vitamin K₁ (240 mg/100 g fw), lutein (1160 μ g/100 g fw), β -carotene (595 μ g/100 g fw), and minerals such as K, Ca, Mg, Fe and Na, whereas they contain very low amounts of nitrates(0.056 g/100 g fw) [8-11]. Another important nutritional feature of *C. spinosum* and ingredients of Mediterranean diet in general, is their fatty acids composition which are mostly consisted from PUFAs (>76% of total fatty acids), while the ratios of PUFA/SFA and n-6/n-3

fatty acids is higher than 0.45 (3.81-4.99) and lower than 4.0 (0.31-0.48), respectively [6,8,10].

The leaves of the plant are also a rich source of bioactive compounds, with chicoric and 5-O-caffeoylquinic acid being the most abundant phenolic compounds (16.85 and 3.82 mg/g extract), while they also contain glutathione and present significant antioxidative properties [6,9,10]. Other compounds that have been reported for *C. spinosum* include alkylresorcinol derivatives (cichoriols A, B, C and D), sesquiterpene lactones (lactucin, lactucin 11b, 13-dihydroderivative, leucodin, tanacetin, lactucopicrin and 3,4-dihydrolactucopicrin), coumarins (umbelliferone, scopoletin, aesculetin and cichoriin) [13,14]

Wild edible greens and *C. spinosum* in specific are valuable food sources that have to be included in modern diets. However, these species have to be further exploited with more intensified commercial cultivation that will render the final product accessible and affordable to most of the consumers, while at the same time will allow for higher quality through the breeding selection of ecotypes and optimization of cultivation practices.

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