Characterization of the volatile compounds of *Corema album* L.

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Introduction and Objectives

Endemic to the Atlantic coast of the Iberian Peninsula, *Corema album* L. (also called "camarinha" in Portuguese) is a spherical berry with a diameter between 5 and 8 mm, white or pink when ripe. It has a mildly acidic lemony flavour, with antioxidant properties recognised and appreciated by consumers. It has a wide range of compounds such as anthocyanins and high concentrations of phenolic acids, including chlorogenic acid, which can absorb free radicals (ORAC) that can be 78% higher than raspberry. It also has long-chain polyunsaturated fatty acids such as omega-3 and omega-6 in its constitution, having neuroprotective and anti-inflammatory capacity. It has high concentrations of minerals such as calcium, iron, and zinc, similar or even higher than those found in strawberries or raspberries. *C. album* has been the target of several works to characterise their antioxidant profile. On the contrary, to our knowledge, studies to characterise its profile in volatile compounds have not yet been carried out. The main aim of the present work was to study the influence of the cultivation mode on the volatile profile.

Methodology

The volatile profiles were analysed by headspace-solid phase microextraction coupled with gas chromatography-mass spectrometry (HS-SPME/GC-MS) of cultivated and wild *C. album*.

3 g ground samples into a 50 mL vial + 5 µl internal standard (2-methyl-4-pentanol at 0.127 mg/mL) → 5 min in a water bath at 30 °C → Fiber (DVB/CAR/PDMS 50/30 µm) was exposed for 30 min at 30 °C → The results were reported in µg of the compound relative to the internal standard per g of fresh sample

Results and Discussion

Volatile compounds are responsible for the perceived aromas. Thus, a different volatile profile leads to the perception of different aromas. The main volatile compounds detected in both samples (Figure 1 and Table 1) were 2-hexenal, 2-decen-1-ol, and hexanal. Their concentration varied between the two samples, mainly the 2-hexenal and 2-decen-1-ol compounds, being determined 395 ± 170 µg/g of 2-hexenal and 204 ± 69 µg/g of 2-decen-1-ol in the cultivated sample, and 162 ± 49 µg/g of 2-hexenal and 39 ± 16 µg/g of 2-decen-1-ol in the wild sample. However, due to the high standard deviations, no significant differences were observed between both samples. Unlike the wild sample, in the cultivated samples, the compound hexyl-oxirane was determined at a concentration of 6 ± 1 µg/g.

Figure 1 -Sample A: cultivated *C. album*; Sample B: wild *C. album*

Table 1 – Volatiles determined in cultivated and wild *C. album*

Volatile compound	Cultivated sample (µg/g, f.w.)	Wild sample (µg/g, f.w.)	p-value
Hexanal	51 ± 31[a]	21 ± 7[a]	0.278
2-Hexenal	395 ± 170[a]	162 ± 49[a]	0.170
2-Decen-1-ol	204 ± 69[a]	39 ± 16[a]	0.051
Hexyl-oxirane	6 ± 1	-	
(*E*,*E*)-2,4-Hexadienal	10 ± 3[a]	4 ± 2[a]	0.069
Nonanal	5 ± 1[a]	3 ± 2[a]	0.312

Note: Values with different letters in the same row are statistically different ($p<0.05$).

Conclusion

Therefore, it was not possible to verify the influence of the cultivation mode on the volatile profile of the *C. album.* The present work demonstrates the potential for further work, not only on the characterisation of the volatile profile in more detail but also on other compounds whose existence may be affected by the cultivation mode.

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Acknowledgment: The authors are grateful to the Foundation for Science and Technology (FCT, Portugal) for financial support by national funds FCT/MCTES to CIMO (UIDB/00690/2020) and the Associate Laboratory for Green Chemistry-LAQV (UIDB/50006/2020). Nuno Rodrigues thanks to National funding by FCT-Foundation for Science and Technology, P.I., through the institutional scientific employment program-contract.