

# Antioxidant capacity of an ethanolic extract of *Elaeagnus x submacrophylla* Servett. leaves

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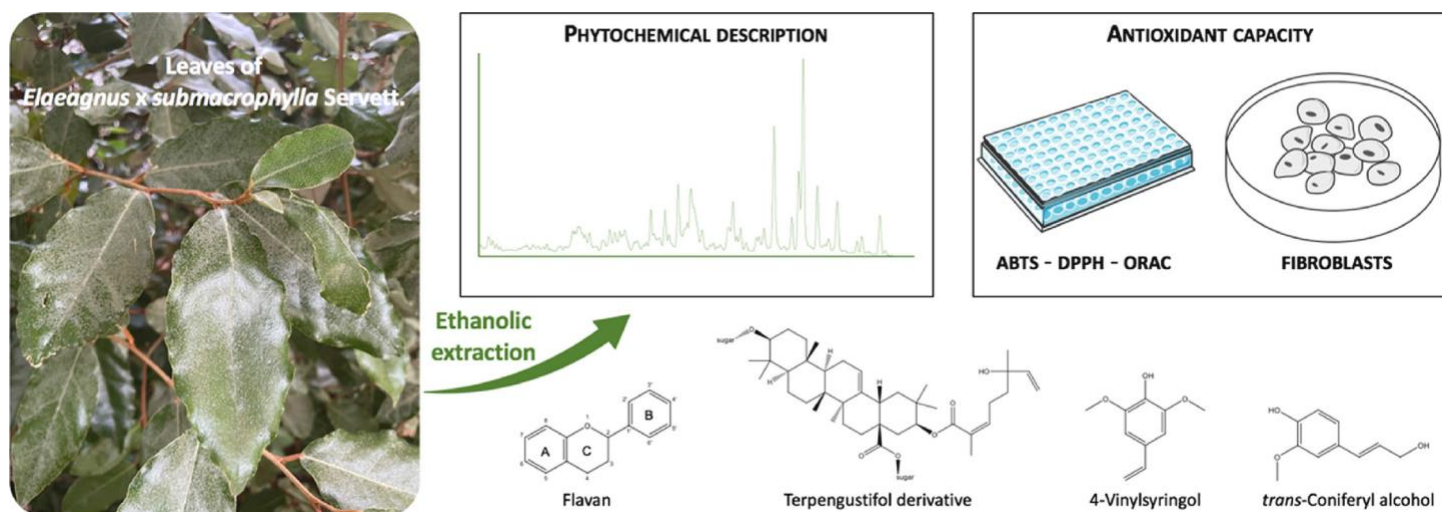
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## Abstract

In this study, we investigated the ethanolic extraction of the leaves of a very common but little studied plant species, *Elaeagnus x submacrophylla* Servett. and the opportunity of generating an antioxidant ingredient. The phytochemical profile of an ethanolic extract is also described here using gas chromatography and ultra-performance liquid chromatography, both combined with mass spectrometry (GC-MS and UPLC-MS), highlighting the presence of flavonoids, saponins, triterpenoids and a set of volatile compounds. Through *in vitro* assays (DPPH, ABTS, ORAC), the free radical scavenging capacity of the ingredient was then investigated (from 0.25 to 1.75 mmol TE/g) and compared with well-known standard antioxidants (BHT, gallic acid, quercetin, Trolox and vitamin C). In addition, *in cellulo* antioxidant capacity was performed using mice fibroblasts, revealing an activity equivalent to 50 mg/L of quercetin when tested the ethanolic extract in the concentration range of 50–300 mg/L, suggesting a synergistic combination effect of the identified phytochemicals. These results support the use of *Elaeagnus x submacrophylla* as a source of antioxidant ingredients.



# Volatile Compounds from flowers of *Elaeagnus x submacrophylla* Servett.: Extraction, identification of flavonoids, and antioxidant capacity

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## Abstract

Beneficial to the ecosystem and with significant potential in permaculture, *Elaeagnus x submacrophylla* Servett. was studied here mainly for the identification of its floral odorants. After olfactory evaluation and determination of the volatile profile of freshly picked flowers by headspace/solid phase microextraction coupled with gas chromatography/mass spectrometry, an ethanolic extract was prepared and investigated for its antioxidant capacity. Unusual molecules were identified in the floral headspace, such as isochavicol or chrysanthemum acetate. The evaluation of the *in vitro* free radical scavenging capacity (from 0.4 to 1.3 mmol TE/g) and total phenolic content (65.1 mg GAE/g) of the extract pointed out a promising antioxidant activity, potentially related to the identification of several flavonoid glycosides. These results have to be considered in the context of the ever-increasing need to produce innovative natural extracts with notably interesting claims for the cosmetic field.

