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ABSTRACTS

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Phytochemical analysis and antisenescence activity of *Sorbus torminalis* (L.) Crantz and *Elaeagnus umbellata* Thunb fruits

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In Italy, many spontaneous plants are used as food in folk traditions and are now being re-evaluated as healthy products with high nutritional value. In the ethnobotanical field, we selected a fruit tree that modern gastronomy has forgotten: the "Ciavardello" (*Sorbus torminalis* (L.) Crantz). The Italian phyto-alimentary tradition (1) uses its fruits to make jams, jellies, syrups, fresh snacks and, less often, alcoholic beverages.

The "Ciavardello" is a species of *Sorbus* native to Europe, North Africa, and Asia Minor and it is a member of the Rosaceae family. It is a deciduous tree or shrub which grows 1-7 m tall (sometimes reaching 20 m) and it is a slow-growing and long-lived species found in forests of broadleaf trees. The trunk is straight and the crown is expanded, globose and dense, while the bark is smooth and greyish. The leaves are alternate, simple, glabrous, petiole, ovate (4–10 cm long and 2–8 cm wide), with five to nine acute lobes, serrate and dark green colored on both sides. The flowers are hermaphrodite, 5-merous, with white petals and they are produced in corymbs. It blooms in spring (April-May) and bears fruit in autumn (September-October). The fruit is a globose to ovoid pome 10–15 mm in diameter and it is greenish to russet or brown and patterned with small and pale lenticel spots when ripe, with a pleasantly acidulous taste (2).

Another interesting plant is 'Albero dei coralli' (*Elaeagnus umbellata* Thunb.), an allochthonous species belonging to the Elaeagnaceae family. It is cultivated in Italy for ornamental purposes, while the fruits are eaten fresh, a custom that was imported from tropical and temperate Asia, its native region. The "Albero dei coralli" is a deciduous shrub or tree, more or less spiny, which grows 3-5 m tall. The leaves are alternate, lanceolate (4-10 cm x 2-4 cm), with wavy margins, green colored above and covered with silvery scales below. The flowers are hermaphrodite, fragrant, whitish, tubular and 4-lobed and they are found in the leaf axils in clusters of 1-7 elements. The fruits are small roundish drupes (3-9 mm diameter), reddish to pink, dotted with scales and they are pulpy, juicy and sweet. It blooms in the spring and its fruits ripen in the fall (2).

Both fresh fruits, collected in the Tuscany region (Italy), were extracted at room temperature with 80% EtOH (three times, every 24 h) and the obtained residues were partitioned between *n*-BuOH and H₂O. The *n*-butanolic extracts were finally analyzed by HPLC-PDA/UV-ESI-MS/MS techniques. The chemical profile of *S. torminalis* revealed the presence of phenolic acids and flavonol glycosides (3), while *E. umbellata* extract was rich especially in quercetin and kaempferol derivatives.

In the scenario of regenerative medicine, the gingival mesenchymal stem cells (GMSCs) have arisen as a promising tool to repair damaged tissues. Herein, the GMSCs were used to investigate the beneficial effects of *n*-butanolic extract of investigated fruits. Both extracts were able to increase the GMSC proliferation and decrease the intracellular accumulation of ROS. Furthermore, the extracts were able to counteract the senescence phenomena in GMSC with different extent. In particular, they contrast the ROS production mediated by hydroxyurea and hydrogen peroxide and reduced the age-related phenotypic changes (SA-β-gal staining).

In conclusion, these results highlight *S. torminalis* and *E. umbellata* fruit extracts as novel sources of antioxidant phytocomplexes able to decrease the senescence process in mesenchymal cells. The ability of both extracts per se to ameliorate the GMSC well-being and decrease cellular senescence shed light on their possible use in regenerative medicine and in particular in all the GMSC *in vitro* application.

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