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**PHENOLIC COMPOUNDS AND BIOACTIVE PROPERTIES OF *RUSCUS ACULEATUS*  
L.: AN UNDEREXPLOITED SUBSHRUB**

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*Ruscus aculeatus* L. is a subshrub used in traditional medicine in different parts of the world, namely in Europe and Iberian Peninsula [1]. According to reported folk knowledge, the aerial parts are mainly used as diuretics and the underground parts are used for the treatment of disorders of the urinary system and as laxative [2]. The present work reports a comprehensive study on *R. aculeatus* phenolic compounds and bioactivities, intending to contribute to the knowledge of the chemical composition of this unexplored species. The plant material of *R. aculeatus* was harvested in April 2019 inside woodlands and hedgerows, in Valpaços, Portugal. Two distinct parts were gathered, the aerial part (cladodes or laminar stems and lateral branches) and the underground organs (rhizomes with roots). After lyophilization, the distinct parts of the plant were further analyzed. Hydroethanolic extracts and aqueous (infusions and decoctions) preparations from the two mentioned parts of the plant were prepared. Phenolic compounds were determined by high performance liquid chromatography (HPLC) coupled to a diode array detector (DAD) and mass spectrometry (MS) using the electrospray ionization interface (ESI). Multi-resistant clinical bacterial strains were used to screen the antimicrobial activity and the antioxidant activity was evaluated through two different *in vitro* assays: inhibition of lipid peroxidation in brain homogenates by thiobarbituric acid reactive substances (TBARS) and oxidative hemolysis inhibition assay (OxHLIA). The cytotoxic activity was assayed using MCF-7 (breast adenocarcinoma), NCI-H460 (non-small cell lung carcinoma), HeLa (cervical carcinoma) and HepG2 (hepatocellular carcinoma) human tumor cell lines, and also a non-tumor cell line (porcine liver primary cells, PLP2). Nine phenolic compounds were detected in all extracts. Apigenin-*C*-hexoside-*C*-pentoside isomer II was the major compound in aqueous extracts and, in the hydroethanolic extract, the most abundant one was quercetin-*O*-deoxyhexoside-hexoside, followed by apigenin-*C*-hexoside-*C*-pentoside isomer II. All extracts revealed antioxidant activity and potential to inhibit some of the assessed bacteria; the aqueous extracts of the aerial part and infusions of roots and rhizomes did not show cytotoxic effects in a non-tumour primary cell culture. This preliminary study provides suggestions of the biological potential associated with the empirical uses and knowledge of this species, in particular its bioactivities.

#### References

- [1] Masullo, M., Pizza, C., Piacente, S. *Planta Medica*, 82 (2016) 1513–1524.  
[2] Thorne Research, Inc (2001) *Ruscus aculeatus* (Butcher's Broom) Monograph. *Alternative Medicine Review*, 6(6), 608-612.

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