



PHYTOCHEMICAL STUDY OF *CENTAUREA CEPHALARIIFOLIA* WILLK.

Alex Fidalgo¹, Victor Saiz¹, David Pérez¹, Arturo San Feliciano¹, Esther del Olmo^{1*}

¹Department of Pharmaceutical Sciences: Pharmaceutical Chemistry. Faculty of Pharmacy, CIETUS, IBSAL. University of Salamanca, Salamanca, Spain. olmo@usal.es

In Memory of Dr. Mahabir P Gupta

INTRODUCTION

Perennial plant with thick, woody rhizome and strong, upright, ribbed stems, 30-90 cm tall. The leaves are divided into more or less linear segments, lanceolate or oblong, covered by a bundle of rough hairs. The lower ones petiolate and the upper ones seated. It shows purple flowers in solitary chapters with long peduncles. The flowers are all tubular, but those in the outer row are larger and sterile. The other bisexual are nectar producers. It blooms throughout the summer (Penas et al 1991). In the Iberian Peninsula it grows in dry grasslands, roadsides and not very closed forests.

No phytochemical studies of this species have been found in the literature. It is a species very close to *Centaurea scabiosa* (of Euro-Siberian distribution). Studies of the genus *Centaurea* indicate the presence of sesquiterpene lactones of the eudesmanolide, guyanolide or germacranolide type, for which various pharmacological activities have been reported (Hassler, 2020).

MATERIAL AND METHODS

The flowering aerial part of *C. cephalariifolia* Willk was collected in July 2021 in Barrio de San Felices, Burgos, Castilla y León, Spain; the plant was identified by Dr. E. Rico, and a specimen

was kept in the herbarium of the University of Salamanca (N^o 170463).

The plant was dried in the dark, ground and extracted (2.3 kg) with diethyl ether (2 x 10 L) to provide the ether extract (7.2 g, 0.31%), that was fractionated with hexane, chloroform, ethyl acetate and butanol. The chloroform fraction that contained sesquiterpene lactones was purified by column chromatography to separate and identify the pure compounds.

RESULTS

The ether extract of *C. cephalariifolia* was fractionated by liquid-liquid extraction with solvents of increasing polarity, to provide 2.71 (38.1%) of a chloroform fraction that after column chromatography led to the isolation, purification and identification of several sesquiterpene lactones.

CONCLUSIONS

The phytochemical study of *C. cephalariifolia* Willk showed a high percentage of fatty acids and sesquiterpene lactones: costunolide, santamarine, reinosin and onopordopicrin with important pharmacological properties.

ACKNOWLEDGMENTS

Project MINECO: RETOS PID2019-106222RB-C32.

