

Author(s): Mechergui, K (Mechergui, Kaouther); Coelho, JA (Coelho, Jose A.); Serra, MC (Serra, Maria C.); Lamine, SB (Lamine, Sassia B.); Boukhchina, S (Boukhchina, Sadok); Khouja, ML (Khouja, Mohamed L.)

Title: Essential oils of *Origanum vulgare* L. subsp. *glandulosum* (Desf.) letswaart from Tunisia: chemical composition and antioxidant activity

Source: Journal of the Science of Food and Agriculture, 90 (10): 1745-1749 AUG 15 2010

Language: English

Document Type: Article

Author Keywords: *Origanum glandulosum*; Lamiaceae; Essential oil; Phenolic compounds; Antioxidant activity; P-cymene chemotype

KeyWords Plus: EXTRACTION; ALGERIA; COMPONENTS; CARVACROL; OREGANO; SYSTEMS; THYMUS; HERBS; ACID

Abstract: BACKGROUND: Characterisation of the essential oils from *O. glandulosum* collected in three locations of Tunisia, chemical composition and the evaluation of their antioxidant activities were carried out.

RESULTS: The essential oils from *Origanum vulgare* L. subsp. *glandulosum* (Desf.) letswaart collected from three localities of north Tunisia - Krib, Bargou and Nefza - were obtained in yields of 2.5, 3.0 and 4.6% (v/w), respectively. The essential oils were analysed by GC and GC/MS and assayed for their total phenolics content, by the Folin-Ciocalteu method, and antioxidant effectiveness, using the 2,2-diphenyl-1-picrylhydrazil (DPPH) radical scavenging assay. The main components of these essential oils, from Nefza, Bargou and Krib, were p-cymene (36%, 40% and 46%), thymol (32%, 39% and 18%), gamma-terpinene (24%, 12% and 16%) and carvacrol (2%, 2% and 15%), respectively. The ability to scavenge the DPPH radicals, expressed by IC50, ranged from 59 to 80 mg L⁻¹. The total phenolic content, expressed in gallic acid equivalent (GAE) g kg⁻¹ dry weight, varied from 9.37 to 17.70 g kg⁻¹ dw.

CONCLUSIONS: A correlation was identified between the total phenolic content of the essential oils and DPPH radical scavenger capacity. The occurrence of a p-cymene chemotype of *O. glandulosum* in the northern region of Tunisia is demonstrated. (C) 2010 Society of Chemical Industry

Addresses: [Coelho, Jose A.; Serra, Maria C.] Ctr Invest Engn Quim & Biotecnol DEQ, ISEL, P-1950062 Lisbon, Portugal; [Mechergui, Kaouther; Boukhchina, Sadok] Fac Sci Tunis, Unite Biochim Lipides & Prot, Tunis 2092, Tunisia; [Mechergui, Kaouther; Khouja, Mohamed L.] Inst Natl Rech Genie Rural Eaux & Forets Tunis, Lab Ecol & Ameliorat Sylvopastorale, Tunis, Tunisia; [Lamine, Sassia B.] Fac Sci Tunis, Unite Rech Genet Populat & Ressources Biol, Tunis 2092, Tunisia

Reprint Address: Coelho, JA, Ctr Invest Engn Quim & Biotecnol DEQ, ISEL, Rua Conselheiro Emidio Navarro 1, P-1950062 Lisbon, Portugal.

E-mail Address: jcoelho@deq.isel.ipl.pt

Publisher: John Wiley & Sons LTD

Publisher Address: THE ATRIUM, SOUTHERN GATE, CHICHESTER PO19 8SQ, W SUSSEX, ENGLAND

ISSN: 0022-5142

DOI: 10.1002/jsfa.4011

29-char Source Abbrev.: J SCI FOOD AGR

ISI Document Delivery No.: 628LO