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جامعة قسنطينة 1 – الإخوة منتوري
كلية العلوم الدقيقة



PEOPLE'S DEMOCRATIC REPUBLIC OF ALGERIA
MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC RESEARCH
Constantine 1 University – Frères Mentouri
Faculty of Exact Sciences

ANNONCE DE SOUTENANCE



Conformément à la décision n° **96/D3C/2026** du **06 Juillet 2026** autorisant la soutenance d'une thèse de doctorat, le Vice-doyennat chargé de la post-graduation, de la recherche scientifique et des relations extérieures, a n n o n c e la soutenance publique d'une thèse de doctorat le :

Samedi 11 Juillet 2026 à 16 HOO

Lieu : Salle de conférences sise au Campus Chaab Errsas.

Filière : CHIMIE

Spécialité : Chimie Pharmaceutique

Doctorant : KERKABOU Abdeldjalil

Sur le thème : « **Phytochemical analysis and biological activity assessment of plant extracts from the Algerian Flora** ».

Devant le jury d'examen :

	Nom et prénoms	Grade	Etablissement d'appartenance
Présidente	BICHA Sabrina	Professeure	Université Constantine1, Frères Mentouri
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A b s t r a c t

This study presents a comprehensive phytochemical and pharmacological investigation of three medicinal plants native to Algeria: *Centaurea nicaeensis* All. var. *walliana* M., and *Pulicaria undulata* (L.) C.A. Mey (Asteraceae), along with *Oudneya africana* (Brassicaceae). The research aims to thoroughly characterize their secondary metabolite profiles and evaluate their potential.

Phytochemical analysis of the Asteraceae species led to the isolation and structural identification of ten compounds, encompassing diverse chemical classes: a phenolic ester, an aromatic aldehyde, an acetophenone derivative, a γ -lactone, a sesquiterpene lactone, a cyanogenic glycoside, and four flavonoids. Notably, several constituents including: 2-hydroxypropan-2-yl 4-hydroxybenzoate, 4-(methylamino)benzaldehyde, 1-(4-hydroxyphenyl)ethenone, 4-hydroxy-3-methyl-dihydrofuran-2(3H)-one from *C. nicaeensis*, as well as Acacetin from *P. undulata* are reported here for the first time in these taxa. Structural elucidation was unambiguously achieved through a combination of UV-vis spectroscopy, 1D and 2D NMR techniques (^1H , ^{13}C COSY, HSQC, HMBC), and critical comparison with published spectral data available in the scientific literature.

For *O. africana*, GC-MS analysis of the leaves' essential oil identified Thirty-five compounds, representing 87.45% of the total EO composition. Additionally, HPLC-DAD phenolic profiling of stems and leaves EtOAc and n-BuOH extracts revealed a diverse range of phenolic compounds. Specifically, 30 phenolic compounds were detected in the leaves EtOAc extract, and 28 in n-BuOH extract, while the stem extracts yielded 27 and 28 phenolic constituents in the EtOAc and n-BuOH extracts respectively.

The antioxidant capacity of all extracts was evaluated using six in vitro assays: DPPH, ABTS, CUPRAC, FRAP, Phenanthroline, and SNP. Among these, polar extracts, particularly n-BuOH extracts, exhibited superior antioxidant potency in compared to the other extracts, attributed to their high levels of polyphenols and flavonoids (TPC and TFC).

In addition, the dermatoprotective potential of the extracts was assessed through in vitro determination of the sun protection factor (SPF). The results revealed that EtOAc, and n-BuOH extracts exhibited a high photoprotective activity, underscoring their potential as natural UV filters.

Moreover, the extracts also demonstrated a promising enzymatic inhibitory effect, with the n-BuOH fractions displaying strong to moderate inhibition of α -amylase, suggesting potential antidiabetic properties. Additionally, these fractions exhibited dual inhibitory activity against acetylcholinesterase (AChE), and butyrylcholinesterase (BChE), which are key therapeutic target in Alzheimer's disease.