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CHEMICAL COMPOSITION AND BIOLOGICAL EVALUATION OF TRADITIONAL ALGERIAN PLANTS *MELISSA OFFICINALIS* L. AND *URTICA DIOICA* L.

Dahia Meridja [a*], Kamel Belhamel [a], Mohamed Harrat [b], Chiraz Belhamel [a], Mohamed Yousfi [b]

[a] *Laboratory of Organic Materials, Department of Process Engineering, Faculty of Technology, University of Bejaia, Bejaia, 06000, Algeria*
[b] *Laboratory of Fundamental Sciences, University of Amar Telidji, Laghouat, Algeria*
[*] *e-mail:dahia.meridja@univ-bejaia.dz*

Abstract. *Melissa officinalis* L. and *Urtica dioica* L. were investigated for their phytochemical profiles as well as their antioxidant and anti-lithiatic properties. LC-MS/MS analysis revealed that *M. officinalis* possessed a more complex and diverse composition, particularly rich in flavonoids (myricetin, and quercetin derivatives) and phenolic acids (caffeic, oleanolic, and salicylic), especially in its ethyl acetate fraction, indicating their lipophilic nature. In contrast, *U. dioica* exhibited a simpler chemical profile, with significant amounts of myricetin, riboflavin, sinapic acid, catechin, and *β*-carotene in its aqueous fraction. These compositional differences correspond to distinct biological activities. Antioxidant assays (DPPH, ABTS, FRAP) indicated that the ethyl acetate fraction of *M. officinalis* exhibited the highest radical-scavenging activity. Furthermore, its aqueous extract showed significant anti-lithiatic efficacy, inhibiting calcium oxalate crystal formation by 87.12% at a concentration of 2 mg/mL.

Keywords: *Melissa officinalis* L., *Urtica dioica* L., LC-MS/MS, antioxidant activity, anti-lithiatic activity.

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