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ORIGINAL ARTICLE

PHENOLIC COMPOSITION, VOLATILE CONSTITUENTS AND ANTIOXIDANT POTENTIAL OF WILD EDIBLE FRUIT *ELAEOCARPUS TECTORIUS* (LOUR.) POIR. (*ELAEOCARPACEAE*)

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Abstract

Elaeocarpus tectorius (Lour.) Poir. is a wild edible fruit of Western Ghats in India, belonging to family *Elaeocarpaceae*. Ethnobotanically, the plant is known to possess multiple health benefits. In the present study, methanol extract of *E. tectorius* fruit was screened for total phenolic content, total flavonoid content and antioxidant activity. The *in vitro* antioxidant activity was evaluated using four different assays: total antioxidant capacity, reducing power assay, 2,2-Diphenyl-1-picrylhydrazyl (DPPH) assay and 2,2′-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS). Further, HPLC and GC-MS analysis was carried out to investigate the potential phenolic acids and volatile constituents present in the fruits. Results indicated that methanol extract of *E. tectorius* fruit successfully scavenged various free radicals evaluated in a dose dependent manner. HPLC and GC-MS profiling revealed the presence of six vital phenolic acids and twelve volatile constituents, respectively. Thus, observations of the present study offer a preliminary evidence of nutritive value of the *E. tectorius*, moreover this fruit can serve as a potential source of antioxidants and can be utilized in food and nutraceutical industries.

Rezumat

Elaeocarpus tectorius (Lour.) Poir. este un fruct sălbatic comestibil din India, aparținând familiei *Elaeocarpaceae*. Din punct de vedere etnobotanic, planta este cunoscută ca având beneficii multiple pentru sănătate. În studiul de față, extractul metanolic obținut din fructul *E. tectorius* a fost testat pentru determinarea conținutului fenolic și flavonoidic total, precum și a activității antioxidante. Activitatea antioxidantă *in vitro* a fost evaluată folosind: capacitatea antioxidantă totală, puterea de reducere a 2,2-difenil-1-picrilhidrazil (DPPH) și a acidului 2,2′-azino-bis(3-etilbenzotiazolin-6-sulfonic) (ABTS). De asemenea, a fost efectuată analiza HPLC și GC-MS pentru a determina posibilii acizi fenolici și compușii volatili prezenți în fruct. Rezultatele au indicat faptul că extractul metanolic din fructul *E. tectorius* a prezentat acțiune antioxidantă doză dependentă. Profilul HPLC a indicat prezența a șase acizi fenolici, iar GC-MS a indicat prezența a 15 compuși volatili. Astfel, observațiile studiului de față reprezintă o dovadă preliminară cu privire la valoarea nutritivă a *E. tectorius*.

Keywords: antioxidant activity, *Elaeocarpus tectorius*, GC-MS, HPLC, total flavonoid content, total phenolic content, wild fruit

Introduction

Plants are considered as primary and rich source of medicines. Plants and plant-based products are favourite choice among people across globe, as they are safe and have no side effects. Several medicinal plants are exploited in identification and elucidation of phytochemicals responsible for therapeutic nature. Different parts of plants possess wide array of phytochemicals that are known to have several health benefits such as antimicrobial and antioxidant activity [31]. Fruits are a rich and natural source of nutritional components and antioxidants. Epidemiological studies indicate that regular consumption and high dietary intake of fruits has beneficial effect against several chronic diseases including hypertension, diabetes and several forms of cancer [2, 4, 6, 34]. India is one of the richest tropical biodiversity countries consisting of several indigenous fruits. Western Ghats of Southern India is a biodiversity hotspot known for several indigenous and endemic fruits. Wild edible fruits are abundantly available during their glut season. Availability of nutritive and phytochemical information on these wild edible fruits is very scarce despite the several attempts that have been made in recent past. Fruits constitute good amount of phenolic acids that provide several health benefits other than nutritional fulfilment. The quantity of phenolic acids in fruits is dependent on multiple intrinsic and extrinsic factors including variety, geography, soil and plant health, climate and storage conditions [3, 9]. Phenolic acids are generally classified based on the number of phenol rings, such as stilbenes, flavonoids and tannins. These phenolic compounds consist of single or multiple