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In Vitro Anticancer Activity of Ethyl Acetate Extracts of Euphorbia geniculata

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ABSTRACT

Anticancer activity of ethyl acetate extract of root parts of Euphorbia geniculata was carried out on two human cancer cell lines viz; Lung (A549) and Breast (MCF-7) at different concentrations using MTT assay.

Key words: Euphorbia geniculata, Ethyl acetate extract, Anticancer activity.

I INTRODUCTION

The genus *Euphorbia* is one of the six largest genera (*Astragalus*, *Bulbophyllum*, *Psychotria*, *Euphorbia*, *Carex*, *Begonia*) of flowering plants, with approximately 2160 species, subdivided into many subgenera and sections. Members of this genus are characterized by the production of a milky irritant latex [1]. The *Euphorbia* species are widely distributed throughout mainlands (both tropical and temperate regions) and range in morphology from small, annual or perennial herbaceous plants to woody shrubs, lianas, trees and even large desert succulents [2]. The genus consists of species of great economic importance, such as *Euphorbia tetragonal*, Euphorbia triangularis (inferior rubber), Euphorbia antisyphylitica (candellila wax), Euphorbia resinifera ("euphorbium") [3].

Diterpenes occurring in plants of the genus *Euphorbia* are the focus of natural product drug discovery because of the wide range of their therapeutically relevant biological activities. (e.g., antitumor, cytotoxic, multi-drug-resistance-reversing, anti-viral properties, various vascular effects, anti-inflammatory activity [4] and their great structural diversity, resulting from various macrocyclic and polycyclic skeletons (e.g., jatrophane, ingenane, daphnane, tigliane, lathyrane, etc.) and oxygen-containing functionalities, including different aliphatic (e.g., acetyl, n-butanoyl, methylbutanoyl, tiglyl, angeloyl, isovaleroyl, etc). and aromatic (benzoyl and nicotinoyl) acids. Diterpenes are considered to be important taxonomic markers because of their limited occurrence; these types of diterpenes are specific to the Thymelaeaceae and Euphorbiaceae families. Over 650 diterpenoids, incorporating more than 20 skeletal types, have been isolated from *Euphorbia* plants. In 2008, Shi et al, summarized the diterpenes isolated previously from different *Euphorbia* species [5].

Euphorbia geniculata, commonly known as Dudhi, belongs to the family Euphorbiacea. It is found in tropical America and naturalized as a weed in many parts of India up to an altitude of 800 m^{-1} . The extract of *E.*

geniculata shows the antifungal activity against *Aspergillus flavus* [6]. It is a wild weed found in Jammu region of India [7]. The plant is locally used for the treatment of bacterial infections and inflammations.

II EXPERIMENTAL

2.1 Plant Material

The aerial parts of *Euphorbia geniculata* (Orteg) were collected from Jammu, (J&K, India) in July 2013. The specimen was identified by Akhtar H. Malik, Curator, Centre for Biodiversity & Taxanomy, University of Kashmir (Specimen deposited under accession No. 1850– KASH Herbarium).

2.2 Extraction

The shade dried aerial parts of *Euphorbia geniculata* (3.0 Kg) were extracted sequentially with petroleum ether (60-80^{o}C), ethyl acetate and methanol in soxhlet apparatus to afford respective extracts which were concentrated under reduced pressure.

2.3 Antioxidant Activity

DPPH (1, 1-Dihpenyl-2-picrylhydrazyl) Radical Scavenging Activity according to the standard method [8]. The reaction mixture consists of 1 mL of 10 mg% of The scavenging activity of 1, 1-dihpenyl-2-picrylhydrazyl (DPPH) radical was measured methanolic DPPH solution and 100 µL of sample solution with varying concentration (20-100 µg/mL). The volume was made up to 3 mL by methanol. The solution was incubated for 30 min in dark. The absorbance of sample and α- tocopherol as a standard was read at 517 nm. Percentage inhibition was calculated by using the formula:

% inhibition = $A_{control}$ - A_{sample}/ $A_{control}$ × 100

Where, $A_{control}$ is the absorbance of the control and A_{sample} is the absorbance of the oil.

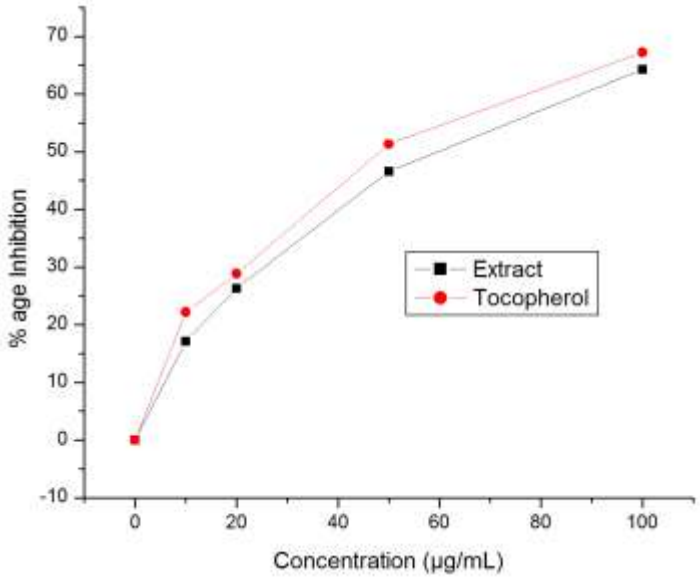
III RESULTS AND DISCUSSION

3.1 Antioxidant activity (DPPH scavenging activity)

The anti-oxidative effect of the extract was examined by its radical scavenging effects by measuring changes in absorbance of DPPH radical at 517 nm (Table 1). Results revealed that the DPPH scavenging ability showed the tendency to increase with the increase in concentration.

Table 1 DPPH scavenging activity (% age Inhibition)

Concentration (µg/mL)	Extract	α-tocopherol
100	64.22±1.00	67.21±1.21
50	46.56±1.43	51.34±1.30
20	26.32±1.45	28.86±1.29
10	17.11±1.21	22.20±1.01



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