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جامعة الملك سعود
King Saud University

Bay Leaves From a Home Spice To a Drug With Favorable Pharmacological Benefit.

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INTRODUCTION

Ethnobotanicals are important for pharmacological research and drug development, not only when plant constituents are used directly as therapeutic agents, but also as starting materials for the synthesis of drugs or as models for pharmacologically active compounds.[1] *Laurus nobilis* is traded as sweet bay leaf. It is small evergreen tree of lauraceae family.[2]These are aromatic and fragrant plant yielding fixed and volatile oil as well as camphor . Traditionally it is used in rheumatism and dermatitis[3].The plant "*Laurus nobilis*" showed antioxidant, neuroprotective anticholinergic activity.[3] There is a study from India published in International Journal of Pharmaceutical and Chemical Sciences it's aimed to evaluate *Laurus nobilis* activity as neuroprotective, antioxidant, analgesic, Anticholinergic, immunostimulant and anticonvulsant activity. The leaf essential oil of *Laurus nobilis* produced sedation and motor impairment, this effect seems because of cineol, eugenol and methyleugenol.[4] Lyophilized aqueous and ethanol extract of *Laurus nobilis* both shown strong total antioxidant activity and also the aqueous extract of *Laurus nobilis* showed prominent anti-inflammatory activity.[4] This study aimed to Investigate the cytotoxic and antioxidant activity of *Laurus nobilis.*

Fig 1. *Larus nobilis* plant, (Lauraceae family)

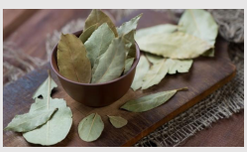

Fig 2.Dried leavs of *Laurus nobilis*

OBJECTIVES

The main objectives of our study were:

1. Preparation and extraction of *Laurus nobilis.*
2. Determination of cytotoxicity of *Laurus nobilis.*
3. Determination of antioxidant activity of *Laurus nobilis.*

METHODS

1. Plant material

The plant was purchased from a local market in Riyadh, cleaned and dried at room temperature.

2. Extraction and preparation

The plant was grinded then the active ingredient extracted with methanol by using maceration extraction method to give us Laurus nobilis methanol extract (LNME).

3. Determination of antioxidant activity

The antioxidant activity was determined using two different methods namely DPPH and ABTS methods.

3.1. DPPH method

The LNME antioxidant activity was estimated by DPPH (2, 2-diphenyl-1-picrylhydrazyl) method. Various concentrations of LNME extract (10, 50, 100, 500 and 1000 µg/mL) were prepared. Thereafter, 0.5 mL of each concentration was mixed with 0.125 mL DPPH and 0.375 mL methanol and incubated for 0.5 h. The optical density was measured at λmax = 517 nm. Ascorbic acid was used as a positive control. Radical scavenging activity was calculated as following formula:

% of radical scavenging activity = (Abs control - Abs extract / Abs control) × 100.[5, 6]

3.2. ABTS assay

Different prepared concentration of the LNME extract (10, 50, 100, 500 and 1000 µg/mL) was pipetted to initiate the reaction for achieving a calibration curve. The absorbance was read at wavelength λ734 nm using UV-vis spectrophotometer. Ethanol (95%) was used as a blank. ABTS (50 µg/ml) solution was used as control. Ascorbic acid was used as standard. [7, 8]

4. Determination of cytotoxic activity by using MTT assay.

The cytotoxicity was determined by using MTT assay. One mL of breast cancer cell lines (MDA-MB-231) was seeded in 24-well plate, then different concentrations (62.5 125, 250, 500 µg\ml) from plant extract were tested for their cytotoxic activity for 48h. Thereafter, 100 µL of 5 mg/ml MTT solution was added to all wells. The plates were incubated at 37°C for 2-4 h. The reduced MTT was measured at 570 nm with microplate plate ELISA reader (BioTek, USA); wells with untreated cells were considered as controls.[9]

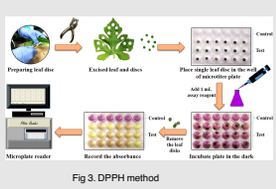

Fig 3. DPPH method

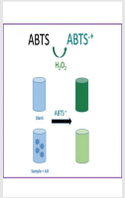

Fig 4. ABTS assay

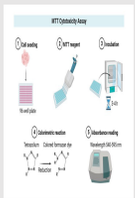

Fig 5. MTT assay

RESULTS

The results of *Laurus nobilis* methanol extract (LNME) showed a great antioxidant but weak anticancer activity.

1. Antioxidant activity

As demonstrated in figure 8,9. The methanolic extract of *Laurus nobilis* showed remarkable antioxidant activity in both experiments. LNME exhibited excellent free radical scavenging activity against DPPH, with an IC50 value of 89.4 ug/ml. Additionally, LNME revealed a high capacity for scavenging ABTS radicals, with an IC50 value of 166.7 ug/ml.

2. Cytotoxic activity

The cytotoxicity of LNME as demonstrated in figure 10 exhibited negligible anticancer effect against MDA-MB-231 breast cancer cells, with an IC50 of 357 ug/ml.

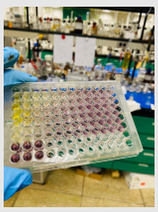

Fig 6. Our extract activity presented using DPPH method.

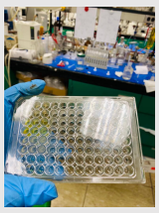

Fig 7. Our extract activity presented using ABTS assay.

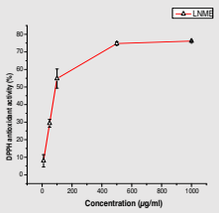

Fig 8. Antioxidant activity with DPPH method

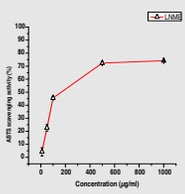

Fig 9. Antioxidant activity using ABTS assay

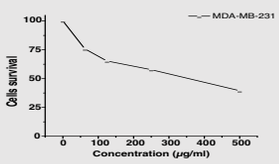

Fig 10. Cytotoxic activity of *Laurus nobilis*

CONCLOSIONS

Our results indicate that *Laurus nobilis* represents an effective antioxidative but weak anticancer drug. Our findings support the hypothesis that LNME is a promising source for natural antioxidant agents. However, further work is required to isolate the active principles.

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