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Study of phytochemical and antioxidant activity of the dimeriablatter

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Abstract
Dimeria blatter is a plant that grows in India. This is a rare, active plant that has been used to heal a variety of ailments. The leaves and roots of the Dimeria blatter plant were employed in this study for phytochemical analysis and biological activities such as antioxidants. Flavonoids, terpenes, phenolic nucleus, terpenes, phenolic nucleus, terpenes, terpenes, terpenes, terpenes, terpenes, terpenes The floral extract of Dimeria blatter contained sterols, tannins, anthracene, saponins, reducing sugars, alkaloids, proteins, coumarins, and saponosides. The floral extract of Dimeria blatter contained sterols, tannins, phenolic nuclei, terpenes, reducing sugars, coumarins, and saponosides. Well-known techniques for assessing antioxidant and anti-inflammatory activity. Both the flowers and the fruit extract of Dimeria blatter are high in antioxidants and anti-inflammatory compounds. The anti-inflammatory efficacy of Dimeria blatter leaves and root extracts is highest in ethanol extract.

Keywords: antioxidant, anti-inflammatory, fruits, flowers, dimeria blatter, phytochemical

Introduction

Herbal medicines have been utilized to treat disease symptoms since ancient times. Despite recent developments in modern medicine, plants continue to play a significant role in health care. Much of the fascination with medicinal plants stems from their long history of usage in traditional medicine as well as their preventive effects, particularly in poor nations. Antioxidant capabilities have been studied in a large range of medicinal plants. Natural antioxidants, as a raw extracts or chemical components, are extremely effective at preventing the damaging effects of oxidative stress. Despite the fact that the toxicity profile of most medicinal plants has yet to be completely investigated, it is widely believed that medications produced from plant products are safer than synthetic analogues.

Reactive oxygen species (ROS) and other oxidants have been linked to a variety of ailments and diseases, according to a growing body of research [1]. The evidence has drawn scientists' attention to the importance of antioxidants in the prevention and treatment of diseases, as well as the maintenance of human health [1, 2]. Many biological activities, such as anti-mutagenic, anti-carcinogenic, and anti-aging responses, are derived from the human body's innate antioxidative mechanism [2-4]. Free radicals are stabilized or deactivated by antioxidants before they attack tar- gets in biological cells. Natural antioxidants have recently sparked a surge in interest for usage in food, cosmetics, and pharmaceutical goods, owing to their multifarious nature and amplitude of activity, which allows them to rectify a wide range of imbalances [1]. The function of free radical reactions in disease pathophysiology is well recognized, and they are known to have a role in a wide range of acute and chronic human diseases, including diabetes, atherosclerosis, ageing, immunosuppression, and neurodegeneration [5]. Antioxidants such as phenolics, flavonoids, tannins, and proanthocyanidins have been found in herbal plants, vegetables, and fruits, according to studies [6, 7]. The antioxidant content of medicinal plants may play important role in the disease protection. Natural antioxidant intake has been linked to a lower risk of morbidity and mortality from degenerative diseases [1]. Liver illnesses continue to be a severe health issue. Free radicals are widely known for causing cell damage through methods of covalent binding and lipid peroxidation, resulting in tissue destruction. Natural antioxidants have piqued researchers' interest due to their ability to scavenge free radicals [8, 9]. The use of medicinal plants strong in antioxidant constituents has been advocated as a viable therapeutic option for hepatic injury [10]. Dimeria blatter Robert Brown described the genus Dimeria in Prodromus Florae Novae Hollandiae, 204. (1810). Dimeria species are more or less gregarious and frequently cover large territories. They are noticeable members of the flora due to the amount of anthocyanin they contain, which may increase as the plant matures. They frequently colour entire hillsides or abandoned fields red or dark-red. The annuals grow wherever they can as habitats, frequently appearing as ruderals on clearings, slips, abandoned fields, and other haphazard locations. Culms are 30-60 cm long and Culm-nodes bearded. Leaf-blade surface is rough as well as hairy on both sides with tubercle-based hairs.A raceme is the inflorescence's basic unit and are 3-4; digitate; unilateral and 4-8 cm long .consisting of a rhachis with a number of pedicelled spikelets on its underside, which are normally secund and overlapping, but can occasionally spread [11].

Plant collection methods

The plant was taken in Rajapur Maharashtra India, in April 2021. Dr. GurumeetWadhawa, Department of Chemistry Karmaveer Bhaurao Patil College Vashi, Plant was

Identified by Dr.Arun Chandore of ACS College,Rajapur Islamabad, bA voucher specimen was placed at the Herbarium of the College.

Fig 1: Dimeriablatter Plant

Preparing the extract
The fresh, whole 4 kg plant was collected and shade dried to get a dry sample of 500 g, which was then coarsely powdered to 60-mesh size in a simple mill and used for solvent extraction. To make the whole methanol extract(11.5%), 500 g of dried sample were extracted twice (each with 2000 ml) with 95% methanol at 25°C for 48 hrs and concentrated using a rotary evaporator under decreased pressure at 40°C. The residue was suspended in water (50 mL) and partitioned with n-hexane, chloroform, ethyl acetate, (two 100 mL aliquots each) and soluble residual aqueous fraction, obtaining the TLH (total plant extract in hexane - 5.4%), TLC (total plant extract in chloroform - 4.3%) and TLE (Total Plant extract in Ethanol - 5.4%) respectively. Phytochemical detection test was carried for TLM, TLE, TLH and TLC extracts.

Alkaloids
8 ml of 1% HCl was stirred into 1 g of TLM, which was then warmed and filtered.Separately, 2 mL of filtrate were treated with (a) a few drops of potassium mercuric iodide (Mayer's reagent) and (b) potassium bismuth (Dragendroff's reagent) [6, 12]. Similarly, Precipitation or turbiditytest was carried for TLE, TLH and TLC.

Saponins
The screening technique was based on saponins' capacity to generate an emulsion with oil [29]. 20 mg TLM were cooked in 20 ml of distilled water in a water bath for 5 minutes before being filtered. For froth production, 10 ml of the filtrate was combined with 5 ml of distilled water and briskly shaken. 3 drops of olive oil were added to the foam, agitated briskly, and emulsion development was observed [7, 12]. Similarly, test was carried for TLE, TLH and TLC.

Test for terpenoids.
To test for the presence of terpenoids in TLM, 5 ml (1 mg/ml) of TLM was combined with 2 ml of chloroform, then 3 ml of concentrated H_2SO_4. The presence of terpenoids was confirmed by the red-dish brown coloration of the interface [13]. Similarly, test was carried for TLE, TLH and TLC.

Anthraquinones were tested
By boiling 200 mg of TLM in 6 ml of 1 percent HCl and filtering the solution. The filtrate was agitated with 5 ml of benzene, filtered, and 2 ml of a 10% ammonia solution added to it. The appearance of a pink, violet, or red colour in the ammoniacal phase indicated the existence of free hydroxyl anthraquinones when the mixture was shaken. Similarly, test was carried for TLE, TLH and TLC.

Test for cardiac glycosides
TLM was combined with 2 ml of glacial acetic acid and one drop of $FeCl_3$ solution (10 mg/ml in methanol). To produce a layer, 1 ml of concentrated H2SO4 was added to the resultant mixture. The appearance of a brown ring at the contact suggested that cardiac glycosides had deoxy sugar characteristics [30]. Similarly, test was carried for TLE, TLH and TLC.

Test for coumarins
300 mg of TLM were coated with filter paper wet with 1 N NaOH in a tiny test tube. The test tube was immersed in a boiling water bath for a few minutes. It was inspected under UV light after the filter paper was removed, and yellow florescence showed the presence of coumarins[12,14].Similarly, test was carried for TLE, TLH and TLC.

Test for flavonoids.
To make the filtrate, 50 mg of TLM were suspended in 100 ml of distilled water. To 10 ml of filtrate, 5 ml of weak ammonia solution was added, followed by a few drops of concentrated H2SO4. Yellow coloration confirmed the presence of flavonoids [13,15].Similarly, test was carried for TLE, TLH and TLC.

Test for Tannins
50 mg of TLM was cooked in 20 cc of distilled water and filtered to test for tannins. A few drops of 0.1 percent $FeCl_3$ were added to the filtrate and the colour shift was examined; a brownish green or blue-black coloration indicated the presence of tannins[16].Similarly, test was carried for TLE, TLH and TLC.

Table 1: Qualitative analysis of phytochemicals of TLM, TLE, TLH and TLC

Name of Test	TLM	TLE	TLH	TLC
Alkaloids	+	+	-	+
Saponins	+	-	+	+
Terpenoids	+	+	-	-
Anthraquinones	+	+	+	+
Cardiac glycosides	-	+	-	-
Coumarins	-	+	+	_
Flavonoids	+	-	_	+
Tannins	+	+	+	+

+ indicate test is positive, - indicate test is negative

Antioxidant Activity Determination

Table 2: Shown the antioxidant activity of organic solvents in Dimeria blatter plant extract in BHT, TLM, TLE, TLH and TLC.

Extract Conc. Mg/ml	BHT	TLM	TLE	TLH	TLC
0.05	48.1	40.20	34.80	24.70	24.69
0.1	49.91	38.70	26.59	46.70	56.78
0.2	52.24	50.70	38.55	30.30	30.70
0.3	60.57	54.12	48.50	44.78	47.70

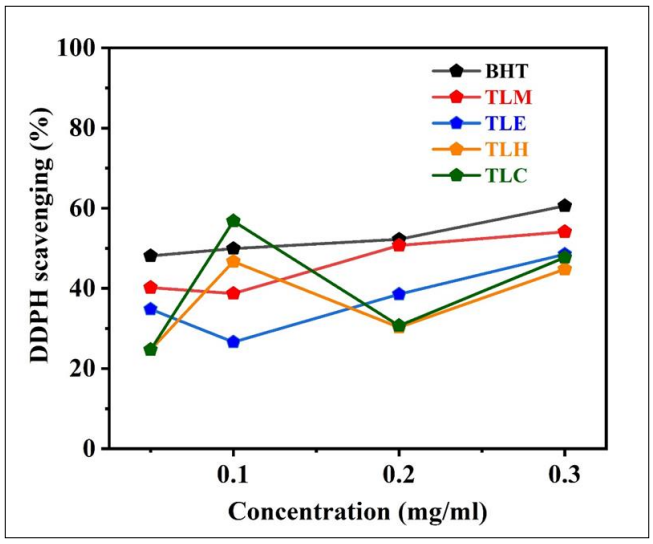

Fig 2: Antioxidant activity of TLM, TLE, TLH and TLC

Conclusions

Sterols, tannins, anthracene, saponins, flavonoids, terpenes, phenolic nuclei, terpenes, reducing sugars, alkaloids, proteins, coumarins, and saponosides were found in the TLM, TLE, TLH, and TLC extracts of Dimeria blatter, according to phytochemical studies. Sterols, tannins, phenolic nuclei, terpenes, reducing sugars, coumarins, and saponosides were found in the Dimeria blatter flower extract. The free radical scavenging property of Dimeria blatter fruits and blossoms indicates that they are a powerful antioxidant that can protect against oxidative stress, which has been associated to a range of ailments including ageing, diabetes, cancer, cardiovascular disease, and rheumatoid arthritis. Overall, it's a natural antioxidant that can aid in the prevention of illness and the maintenance of good health. Its ethno medicinal claims were correct, according to the aforementioned trial results. This supports the idea that the herb has previously been used to treat inflammation. The findings of the study advocate the use of Dimeria blatter fruits and flowers to ensure effective plant resource protection and long-term use. Traditional wisdom should be combined with scientific findings to promote local community awareness.

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