

“Study of Bioactive Compound Screening, Invitro Antioxidant Potential of Leaf Extracts of *Centella asiatica* In Wound Healing”

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ABSTRACT

The current review was completed to clarify free extremist rummaging action of the leaves of *Centella asiatica*. *Centella asiatica* (L.) is an enduring spice, generally utilized in food and drinks and has expanded over the course of the years essentially because of its gainful utilitarian properties. Leaves of *Centella asiatica* were gathered from in and around Trivandrum region. Its potential antioxidant action is connected with its bioactive constituents. In the current review the antioxidant limit, the free revolutionary rummaging movement and practical compounds by FTIR were assessed. The free revolutionary searching action of the leaves of *Centella asiatica* utilizing 2, 2-diphenyl-1-picrylhydrazyl (DPPH), Decreasing power Examine Hydrogen peroxide measure, Superoxide extremist rummaging potential and Nitric Oxide Restraint not entirely set in stone. It was found that *Centella asiatica* displayed fantastic antioxidant limit and revolutionary ability to search still up in the air by the IC50 values. The outcomes demonstrated that *Centella asiatica* leaves could be a significant wellspring of normal extremist scroungers. Antioxidants assume a part in safeguarding against specific circumstances like coronary illness and stroke. It has been suggested that the instruments prompting these illnesses might be advanced by free revolutionaries and that antioxidants might smother the activity of these atoms.

Keywords: bioactive constituents, antioxidant, coronary illness, stroke, scroungers

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I. INTRODUCTION

Obliging herbs are commonly utilized for managing a wide range of illnesses, such as asthma, digestive problems, skin concerns, respiratory, urinary, and weight issues associated with the heart and liver. *Centella asiatica* (L) grows in India. is crucial close by obliging plant utilized for different applications (Jacinda and Ian, 2009). Since antiquity, traditional Indian medicine has relied on *centella asiatica* to treat a wide range of masochistic conditions, particularly injuries and illnesses. It is also recommended as a nerve tonic and for ongoing illnesses in the Ayurvedic medical system (Dora and Khatri, 2011). These plants mix an alternate bunch of naturally powerful mixtures, that are critical for to make due and flourish in the ordinary territory, consolidating cautious capacities in regards to abiotic stresses got from temperature, water status, mineral enhancement supply and to mess with irritates. Restorative plants make up about a quarter of the medications prescribed to patients in current medicine, and they have been thoroughly tested. *Centella asiatica*, generally known as 'Indian Pennywort' has a spot with the family Apiaceae (Umbelliferae) have major areas of strength for remarkable and hence it is generally use in Ayurvedic fixes. The plant's leaves, stem, and root contain a variety of related metabolites, including steroid, terpenoids, flavonoids, tannins, glycosides, coumarins, carbohydrates, proteins, and amino acids. Some of the compounds that are harmful are rib 2010B, madecassoside, centelloside, indcentelloside, thankuniside, isothankuniside, brahmicaside, betulic deplorable, thiamine, and the saponin glycosides brahmoside and brahminoside, as well as chlorogenic and rosmarinic acids. In this setting the current work is done to separate the bioactive compounds present in *C. asiatica* utilizing different solvents, fundamental screening of phytochemical and concentrating on the antioxidant potential followed by the antimicrobial movement of the leaf extracts of *C. asiatica* against the microbial microorganisms. The strong concentrate action was affirmed against *Staphylococcus* sp. GC-MS examination was performed to recognize the bioactive compounds present in *C. asiatica*.

II. LITERATURE REVIEW

C. asiatica contains a few triterpenes, saponins like asiaticoside, asiatic corrosive, saponins, madecassic corrosive, vellarin, adecassoside, glycosides and centelloside. *C. asiatica* is one of the profound spices for further developed reflection in Ayurveda (Castiglioni, 1958). This spice is utilized by Yogis to increase their reflection capacities through better fixation, center and alertness. This spice has likewise shown extraordinary commitment in restoring mental impediment and expanding intelligence level. The consequence of twofold blind trial of mandookparni on intellectually impeded kids showed an extremely giant improvement in both general cutoff and standard of lead (Sharma et al., 2000). In extension to the helpful importance, the plant is created and consumed as a vegetable or flavor in China, Southeast Asia, India, Sri Lanka, Africa, Sea countries and is finding affirmation in the western world (Zhi-Energetic Jiang et al., 2005). The dynamic elements of triterpenoid, saponins incorporate asiaticoside, centelloside, madecassic and asiatic corrosive. Saponins invigorate collagen development, to be specific protein structures that assume a part during the time spent wound healing (Irham et al., 2019). From the literature we proposed a novel model. The objectives of the present study include

- To gather the plant test *Centella asiatica* from neighbourhoods.
- To get ready leaf separate utilizing different dissolvable.
- To screen different phytochemicals, present in the leaf concentrate of *Centella asiatica*
- To perform antioxidant, DPPH movement of leaf concentrate of *Centella asiatica*
- To perform GC-MS examination to assess the bioactive compounds present in leaf concentrate of *Centella asiatica*.

III. MATERIALS AND METHODS

➤ Collection of plant material

The whole plants of *Centella asiatica* were assembled from the close by regions of Parassala, Thiruvananthapuram, Kerala. The leaves of the accumulated plants were disconnected, cleaned and over dried at 35 °C for 2 hrs to get a fine powder.

➤ Preparation of leaf extract

For extraction, 5gms of powdered leaf test of *Centella asiatica* were extricated with 50 ml of chloroform, oil ether, CH₂Cl₂ and watery separately. The blend is saved for 24 hours of rotator shaker and sifted through the channel paper. The gel like unrefined concentrate was put away in a fridge for additional examination.

➤ Phytochemical screening

The extracts were evaluated for the presence of phytochemical constituents which might be the justification for the antimicrobial properties of *Centella asiatica*.

➤ Antioxidant Activity

In vitro assessment of antioxidant action of DPPH method. Different dissolvable extracts of leaf and ascorbic corrosive (standard) 100 µg/ml were ready in methanol. DPPH (1,1-diphenyl-2-picrylhydrazyl) (0.002%) in methanol was utilized as free revolutionary. Equivalent measure of various grouping of dissolvable extracts and DPPH were blended in spotless and marked test tube separately and the cylinders were brooded at room temperature in dull for 30 minutes. The optical thickness was estimated at 517 nm utilizing UV noticeable spectrophotometer. The level of stable DPPH decolorization to DPPH (diminished type of DPPH) yellow showed the searching action of concentrate against the stable DPPH was determined utilizing the accompanying equation.

Scavenging activity (%) $[(A-B)/A] \times 100$

Where, A is absorbance of DPPH, B is absorbance of extract in combination with DPPH after incubation.

➤ GC-MS Analysis

An Agilent 8890 improvement with an AOC-20i autosampler and a Gas Chromatograph attached to a Mass Spectrometer (GC-MS) equipped with a Five-star 5MS (5% diphenyl/95% dimethyl polysiloxane) stuck a dainty segment (30 0.25 m ID 0.25 m df) for the GC-MS evaluation of the whimsical mixes from *Centella asiatica* plant. For the GC-MS search, an electron ionisation framework with an ionisation energy of 70 eV and running in electron improvement mode was employed. As a transporter gas, 99.9% helium gas was used, with an imbue volume of 1 l and a steady stream speed of 1.2 ml/min (a split degree of 15:1). The injector was kept at 250 °C, the molecular source was kept at 230 °C, and the grill was run at 350 °C with a 5 °C/min ramp to 180 °C

in 3 minutes and then 5°C/min to 300°C in 5 minutes. Mass spectra were preserved at 70 eV, which led to a 0.5-second delay in breadth. additionally, pieces weighing 45–450 Da. The entire GC/MS procedure took 53.5 minutes, including a dissolvable delay of 3 minutes. Examining the average maximum point in each member's district, the theory is still dubious. Mass spectra and chromatograms were processed using a Very Mass ver-5.2.28-29, and a Very Mass Gold-Perkin-Elmer was employed as a mass locator for this assessment.

IV. RESULT

➤ **Phytochemical screening of leaf extract of *Centella asiatica***

Based on the primary screening results (Table 1), it is evident that *C. asiatica*'s methanol concentrate contains alkaloids, flavonoids, tannins, saponins, and glycosidase.

Table 1. Phytochemical analysis of leaf extract of *Centella asiatica*

Sl. No	Compounds	Methanol	Ethanol	Ethyl acetate	Chloroform
1	Flavonoids	+	-	-	-
2	Tannins	-	-	-	+
3	Alkaloids	+	+	-	-
4	Saponins	+	-	-	-
5	Glycosidase	+	-	-	-

➤ **DPPH Assay (Antioxidant)**

DPPH measure is a speedy, solid and reproducible boundary to look for invitro antioxidant action of unadulterated compounds as well as plant extracts. The decline in absorbance by the DPPH revolutionary with expansion in centralization of concentrate appears in the fast staining of the purple DPPH propose that the concentrate has antioxidant movement because of its proton giving capacity. The concentrate utilized for antioxidant movement makes huge impacts. The outcomes from the antioxidant measure demonstrated the way that every one of the extracts can search the revolutionary to certain expand (Table:2).

Table 2: DPPH Activity of Sample AC and Standard Ascorbic Acid

Concentration	OD Value	Percentage of Inhibition
AC μg/ml	0.731	0.54
AC 20 μg/ml	0.725	1.36
AC40 μg/ml	0.719	2.17
AC80 μg/ml	0.708	3.67
AC160 μg/ml	0.696	5.30

Antioxidant action of *Centella asiatica* separate showed a portion subordinate searching action. The most elevated searching movement was noted in chloroform remove which showed 8.70. The outcome displayed in table 2.

➤ **GC-MS Analysis**

Centella asiatica chloroform concentrate contained 16 compounds, including o-Cymene, Decane, 2,4,6-trimethyl, Cyclohexane, 1-methyl-4-, Pentadecane, 3-Methyl-4-isopropylphenol, Dodecanr, 2,6,11-trimethyl, Caryophyllene, Heptadecane, 2,6,10,15-tetramethyl, Hexadecane, 2,6,11 methyl,Ecosane,Tricisane,Tetracosane,Pentacosane,1,3 Benzene dicarboxylic corrosive bis , Octadecane, 3-ethyl-5, W-18, Octadecane, 1,1-bis. Of these 3 Methyl-4-isopropylphenol is the most elevated top worth of 1,3-Benzenedicarboxylic corrosive, bis(2-ethylhexyl) ester. (Table 3)

Table 3: GC-MS Analysis of *Centella asiatica*

S L No	RT	Score	Area	Area %	Probability %	Compound	M.W	Formula
1	5.194min	811	118754.022	2.76	7.95	Undecane	156.31 g/mol	C11H24
2	6.075min	790	68591.691	1.60	7.22	Decane,2,4,6-trimethyl-	184.36 g/mol	C13H28
3	10.182min	818	155799.967	3.63	6.25	Dodecane,2,6,11-trimethyl-	212.41 g/mol	C15H32
4	14.921min	869	248333.657	5.78	17.31	1H-	204.3511	C15H24

						Cyclopenta[1,3]cyclopropa[1,2] benzene,octahydro-7-methyl	g/mol	
5	15.427min	810	172077.500	4.01	5.75	Nonadecane	268.518 g/mol	C19H40
6	16.477min	829	183022.824	4.26	10.35	Hexadecane,2,6,11,15-tetramethyl-	282.5 g/mol	C20H42
7	23.147min	885	245263.048	5.71	33.18	3,7,11,15-Tetramethyl-2-hexadecane-1-ol	296.5 g/mol	C20H40O
8	25.110min	845	96028.214	2.24	66.09	Benzene, [1-methyldodecyl]-	232.4 g/mol	C17H28
9	26.673min	725	102530.048	2.39	6.57	Methoxyacetic acid,4-hexadecyl ester	314.5 g/mol	C19H38O3
10	29.098min	780	241569.111	5.62	57.38	Panaxynone	260.4 g/mol	C17H24O2
11	32.030min	812	189578.422	4.41	18.08	Eicosane	282.5 g/mol	C20H42
12	33.962min	818	356695.530	8130	16.61	Tricosane	324.6 g/mol	C23H48
13	35.749min	818	621234.910	14.46	11.24	Tetracosane	338.7 g/mol	C24H50
14	37.425min	816	556710.251	12.96	28.7	Pentosane	352.7 g/mol	C25H52
15	40.513min	604	212759.111	4.95	7.14	Octadecane,1,1'- [1,3-propanediylbis {Oxy}} bis-	581.1 g/mol	C39H80O2
16	41.207min	711	726362.792	16.91	31.07	1,3-Benzenedicarboxylic acid, bis[2-ethylhexyl] ester	390.5561 g/mol	C24H38O4

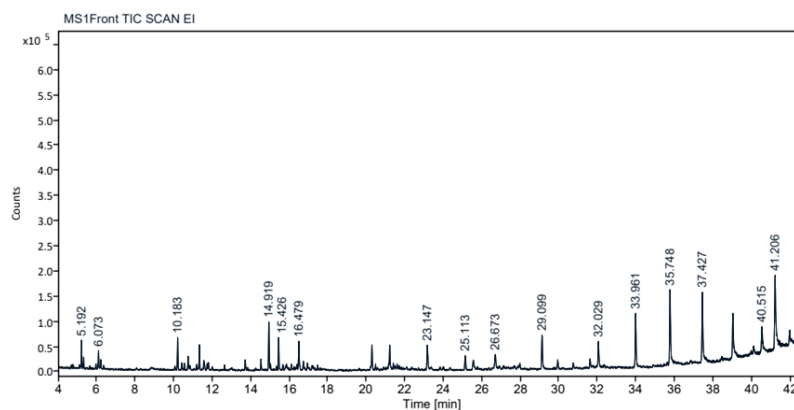
V. DISCUSSION

Graph 1: GC- MS Analysis of Centellaasiatica

Method Parameters

MS Library Search Parameters

Automatically search TIC peaks: Yes
 MS Library: C:\NIST17\MSSEARCH\mainlib
 Maximum number of hits returned: 1
 Minimum spectrum match score: 600



Strong sciences are known to place attention on the various phytochemical substances. Flavonoids have been suggested as nature's natural reaction transformer because of their reputation for having the power to change the body's reaction to awareness and destruction, as well as their demonstrated capacities to be antigenically sensitive, coordinating, antimicrobial, and at odds with disease mechanisms (Alcaraz et al., 2000). Alkaloids, flavonoids, glycosides, tannins, terpenoids, saponins, and amino acids were found to be abundant in the plant's phytochemical range (Okwu et al., 2006). This suggests that the plant is antagonistic to proliferative processes and hostile to compromising its advancement powers.

The subjective phytochemical transporter out on *Centella asiatica* leaf's uncovered the presence of alkaloids, flavonoids, tannins, glycosidase, saponins, carbohydrate, phenolic compound, quinones, steroids, terpenoids .The counter microbial movement of the extracts on the test creature might be because of the presence of above phytochemical compound .The presence of bio dynamic compound is major areas of strength for the that leaf extracts of *Centella asiatica* has an extraordinary restorative use. As per (RashmiPa, Linu Mathew 2012) presumed that the subjective phytochemical examination of *Centella asiatica* leaf separate contain alkaloids and flavonoids those compounds are thought assume a part as an enemy of microbial source in *Centella asiatica*

VI. CONCLUSION

The rising microbial opposition for the utilization of anti-toxins has made it important to do research to assess plants as wellspring of potential chemotherapeutic and antimicrobial specialist alongside their ethnomedicinal use. The antimicrobial action of leaf concentrate of *Centella asiatica* were explored against clinical microbes and organisms like Aspergillus, Candida and fusarium. It additionally explored against staphylococcus in wound disease utilizing plate dissemination strategy. The plant remove was arranged utilizing CH₃CO, chloroform, Fluid arrangement and oil ether. The chloroform concentrate of *Centella asiatica* showed the presence of some compound, for example, Undecane, Decane, 2,4,6-trimethyl-, Dodecane, 2,6,11-trimethyl-, 1H-cyclopenta[1,3] cyclopropa[1,2]benzene, octahydro-7-methyl-, Nonadecane, Hexadecane, 2,6,11,15-tetramethyl-, 3,7,11,15-tetramethyl-2-hexadecen-1-ol, Benzene, [1-methyl dodecyl]-, Methoxyacetic acid, 4-hexadecyl ester, Panaxynone, Eicosane, Tricosane, Tetracosane, Pentacosane, Octadecane, 1,1'- [1,3 propanediylbis{oxy}]bis-, 1,3-benzenedicarboxylic acid, bis[2-ethylhexyle]ester. Of these 1,3-Benzenedicarboxylic acid, bis[2-ethylhexyl]ester have most elevated top worth. It is obvious from the outcome that the concentrate of the plants utilized in the review go about as a decent wellspring of anti-microbials against different microbial microorganisms. The aftereffect of study supports the utilization of chosen restorative plants to find bioactive regular item.

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