International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

An Overview of Ethnobotany, Phytochemistry and Pharmacological Action of Selected Medicinal Plants

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Abstract: ***The plants Acorus calamus, Withania somnifera, Clitoria ternatea, Centella asiatica, Wedillia chinensis, Cissus quadrenqularis are the commonly used plants in South India in day-to-day life as part of food as well as to treat many diseases as traditional medicine, Cassytha filiformis is a parasite herb which is used in many parts of the world for traditional medicine. Like food, these are consumed for immunity, energy, vitamin and mineral sources as well ashome remedies for certain health conditions. As a medicine, these plants have many Phytochemical constituents which are the reason for their biological activity. Various secondary metabolites were found from these plants including Alkaloids, Terpenoids, Saponins, Tannins, Flavonoids, etc and multiple biological activities were established by in-vivo and in vitro studies so far. In the future also, studies needto be carried out to bring effective medicines to cure various new diseases in humans.***

Keywords: Ethnobotany, Phytochemiclas, Cassytha filiformis, Acorus calamus, Withania somnifera, Wedilia chinensis

1. Introduction

In day-to-day life, many plants have been consumed in various ways of food. Among them, many of the plants have good medicinal properties and treat many diseases. In this article we are discussing the seven plants in which some are in medicinal purpose and some are in routine life, i.e. *Cassytha filiformis*, *Acorus calamus*, *Withania somnifera*, *Wedilia chinensis*, *Clitoria ternatea*, *Centella asiatica*, *Cissus quadrenqularis*. The plants are used traditionally by focusing ona few targets only, however, these plants have many medicinal properties due to the phytochemical ingredients.

Normally *Cassytha filiformis* used as a color agent in die industry, *Acorus calamus* is used to treat the digestive problems in infants, *Withania somnifera* is used for energy and strength, *Clitoria ternatea*is used for Bronchodilator, *Centella asiatica*is used for memory enhancer, *Cissus quadrengularis* used for Anti-inflammatory, *Wedilia chinensis* used for hair fall, jaundice, and memory power.

Herbal preparations of these plants had wide acceptance in the global market. Many countries approved these herbal products for particular purposes. In India, these medicines are in use from very ancient times in Siddha and Ayurveda.

However, these herbs have lots and a lot of other capacities to treat various diseases due to the various phytochemical presence.

2. Literature Survey

The literature survey has been conducted in PubMed, Research gate, Google scholar.

Ethnobotany of Selected Plants

The plants *Acorus calamus, Withania somnifera, Clitoria ternatea, Centella asiatica, Cissus quadrenqularis, Wedilia chinensis* have traditional usages all over the world. The ethnobotany details of these plants are as follows,

CASSYTHA filiformis

Kingdom: Planatea
Family: Lauraceae
Genus: Cassytha L
Species: *Cassytha filiformis L*
Vernacular Names: Amarbelli
Habitat: Herb
Distribution: This plant is spread globally in the Tropics. In India, it is available mainly in Seacoast and also found in the greater part.

Ethnomedicinal Use

In Taiwan, *Cassytha filiformis* was recorded with the effectiveness for diuretic, gonorrhea, and kidney ailments. It was used in Africa for the treatment of African trypanosomiasis, cancer, etc. *Cassytha filiformis* is used as the main alternative for Cuscuta in the traditional Ayurveda. In Dye industries, this plant is used as a coloring agent because of its brown color stem [1].

ACORUS calamus
Kingdom: Planatea
Family: Acoraceae
Genus: Acorus
Species: A. Calamus
Vernacular Names: Vacha
Habitat: Herb

Distribution
This plant is available in tropical Asia and the North temperate hemisphere of the globe.
It is available throughout India. It is available as wild or cultivated.

Ethnomedicinal Use
This plant was used for Constipation and lesson swelling in ancient China. The rhizomes are used to treat various diseases i. e fever, bronchitis, asthma, and sedatives in Indian ayurvedic medicine. This was used to treat cough by native tribes. Native tribes use this decoction as carminative and as an infusion for cholic. And these rhizomes are used to treat gastrointestinal problems in many countries like Pakistan, Nepal, China, England, Indonesia [2].

WITHANIA somnifera
Kingdom: Planatea
Family: Solanaceae
Genus: Withania
Species: W. Somnifera
Vernacular Names: Ashwagandha
Habitat-Un-shrub

Distribution:
This plant is available in the Mediterranean to India, Africa, and SriLanka. This plant is available in India throughout the drier parts and in the sub-Himalayan tracts of India.

Ethnomedicinal Use
In North East India, the plant used for female fertility, Leprosy.
In Andrapradesh, the plant used for Combat anemia; increasing sperm count.
In south India the plant is used for Anti-inflammatory; ulcers and Respiratory problems in children [82].

WEDILIA chinensis
Kingdom: Planatea
Family: Asteraceae
Genus: Sphagneticola
Species: S. Calendulacea
Vernacular Names: Karisalai
Habitat: Herb

Distribution:
This plant is available globally in Indo-Malesia. In India, it is found in moist places, hedges, the margin of ponds, and coastal areas almost throughout India. [1].

Ethnomedicinal Use
This plant Infusion is used to treat the swelling of the abdomen in Indo-China. In Namakkal District. Tamil Nadu, India, The plant Decoction was used for reducing mental tension and to induce sleep by tribes who live in Kolli Hills [3].

CLITORIA ternatea
Kingdom: Planatea
Family: Fabaceae
Genus: Clitoria
Species: C. Ternatea
Vernacular Names: Sangupushpi
Habitat: Climber

Distribution:
This plant is spread from South America to the Old World tropics which are the tropical regions of the world. It is available throughout India as well as in the Andaman Islands. This plant is grown in gardens.

Ethnomedicinal Use
This plant is used for various disease treatments in traditional Ayurvedic medicine, i. e to treat epilepsy, memory-related issues, reducing stress and depression, for sleep, and as a nootropic. Since the flower's appearance is looking like a female reproductive organ, it was used for

female libido-related issues in traditional Chinese medicine [4, 5, 6].

CENTELLAasiatica:
Kingdom: Planatea
Family: Apiacae
Genus: Centella
Specius: C. asiatica
Vernacular Names: Vallarai
Habitat: Trailer

Distribution
This plant is spread worldwide in pantropical and temperate regions of both hemispheres. It is commonly grown in crop fields as a weed and other waste places near water streams and reservoirs throughout India. It spreads on moist soil ground, particularly along bunds and canals. [1]

Ethnomedicinal Use
In Bukoba district, Tanzania, the whole plant is used after extraction in water to treat diabetes (Type-1 and type-2). In India, this plant was used for memory enhancing and this plant was used for Type 1 and Type 2 diabetes in Trivandrum-Kerala, and Kanyakumari-Tamilnadu in India. In Eastern culture, it has been used as a sedative agent. [7].

CISSUS quadrengularis
Kingdom: Planatea
Family: Vitaceae
Genus: CISSUS
Specius: C. Quadrangularis
Vernacular Names: Pirandai
Habitat: Straggler

Distribution:
This plant is widely spread in the Indo-Malesia region. This plant grows in Africa and parts of Asia. In India this plant is available throughout India in hotter parts, scrub jungles, wastelands and roadsides also cultivated in gardens

Ethnomedicinal Use
The whole plant is used for medicine. This plant is commonly used for bone healing and weight loss. In Thailand, this plant also is the most used medicinal plant. In Ayurvedic medicines also use *Cissus quadrenqularis*. It is also used for many diseases like diabetes, high cholesterol, hemorrhoids, and many others. However, scientific evidence has yet to be identified for these uses [8].

Phytochemistry

Secondary Metabolites were reported in the six plants
Secondary Metabolites are the important phytochemicals present in the plants which are key responsible for their biological actions. Qualitative analysis is the preliminary tool for the identification of the presence of secondary metabolites. Various wet techniques i. e Wagner's test for Alkaloids, Molisch's test for Carbohydrates, Keller Fellaini's test for Glycosides, Alkaline reagent test for flavonoids, Ferric chloride test for Phenols, Precipitate test for Tannins, Foam test for Saponins, Libermann-Burchard test for Sterols, Salkowki's test for Terphenoids, etc are the preliminary measuring techniques for secondary metabolites. The secondary metabolites reported in the seven plants are as follows,

Phytochemical	*Cassytha filiformis*-*MeoH extract* [1, 9]	*Acorus calamus*-*MeoH extract* [10]-	*Withania somnifera*-*MeoH extract* [11]-	*Clitoria ternatea*-*MeoH extract* [12, 13]-	*Wedilia chinensis*-*MeoH extract* [14, 15]-	*Centella asiatica*-*MeoH extract* [16, 17]-	*Cissus quadrenqularis*-*MeoH extract* [18, 19]
Alkaloids	+	+	+	+	+	+	+
Flavonoids	+	+	+	+	+	+	+
Phenolic compounds	-	+	+	+	-	+	-
Tannins	+	+	-	+	+	+	+
Glycosides	+	+	+	+	+	+	+
Steroids and Terpenoids	+	+	+	+	-	+	+
Carbohydrates	+	+	-	+	-	+	+
Saponins	+	+	-	+	+	+	+

Phytochemicals reported in the six plants
The phytochemical investigation is an ongoing activity for many years since these chemical constituents are the backbone of the therapeutic activity. There are many important phytochemicals reported in the six plants. The phytochemicals were identified by analytical techniques mainly by GC-MS, LC-MS. The reported phytochemicals are as follows,

Cassytha filiformis [9,	Acorus	*Withania*	*Clitoria ternatea* [25, 26,	*Wedilia chinensis*	*Centella*	*Cissus*

20]	calamus [3, 21]	*somnifera* [22, 23, 24]	27]	[28, 29]	*asiatica* [30, 31, 32]	*quadrenqularis* [33, 34, 35]
, 12-Octadecadienoic acid (Z, Z)-2, 3-dihydroxy propyl ester	Asarone	Hexane decanoic acid methyl ester,	1, 2-Benzenedicarboxylic acid, Bis (2-Methylpropyl) ester	2-Tridecanone	B-Elemene,	Onocer-7-ene-3, 21-diol
Cholan-24-oic acid, 3, 7, 12-tris (acetyloxy)-, methyl ester, (3α, 5β, 7α, 12α)	β-Asarone,	ethyl iso-allocholate,	Octadecanoic acid, methyl ester,	Benzoic acid, 2-hydroxy-methyl ester	Benzene 1, 1-oxy bis,	7-oxoonocer-8-ene-3β, 21α-diol
Actinodaphine	Azarone,	O-Bromoatropine,	1, 2-Benzenedicarboxylic acid Dibutyl ester,	Phenacetin	α-Humulene,	Friedelin
N-Methylactinodaphine	Elemicin	2-Methoxy 4-cinylphenol,	1, 2-Benzenedicarboxylic acid, Butyl 2-Ethylhexyl ester,	A-elemene	α-Cadinol,	Quadrangularin A
Predicentrine	Mannosamine	Sucrose,	1, 2-Benzenedicarboxylic acid, Butyl decyl ester,	Pentadecanoic acid, methyl ester	Neophytadine,	Resveratol
Cholestan-7-one, cyclic 1, 2-ethanedienyl acetal	β-Curcumene	Phytol,	1, 2-Benzenedicarboxylic acid, Mono (2-Ethylhexyl) Este	β-myrcene	(+)-Norreticuline	Beta-sitosterol
Neolistine	3-Carene	17-Octadecynoic acid,	Hexanoic acid, 2-Methyl	α-terpinene	Tetracosane	Tetradecanoic acid
Dicentrine	α-Pinene	n-Hexadecanoic acid,	Phytol, Methyl isostearate, Hyocholic acid,	T-Caryophyllene	Pentadecane, 3-methyl	Hexadecanoic acid
Cassythine	D-Limonene	Azietidin-2-one 3, 3-dimethyl-4-(I-aminoethyl), Oleic acid,	4H-1-Benzopyran-4-one, 7-hydroxy-2 (4-hydroxyphenyl)	α-humulene	Asiatic acid,	Piccatammol
9 Cathafiline	β-Pinene	9-Methyl-Z-10-Tetradecen-1-ol-acetate,	Cyclopentaneundecanoic acid, methyl ester	Carvocrol	madecassoside	Beta amyrin
5-Stigmastan-3, 6-dione	1-Trideccene,	9-Octadecenoic acid (Z)-methyl ester	Finotin	Thymol	Phytol	Asarone
Didodecyl phthalate	Cetene,	Withaferin A	B-Sitosterol	α-bergamotene	madasiatic acid	Phytol
Eicosanoic acid, methyl ester	(-)-Aristolene	Withanolide A and E	Teraxerol	(E)-6-Noneyl acetate	Octadecanoic acid	Alpha amyrin
Hexatriacontane	β-Guaiene	sitoindosides VII-X	Kaempferol	N-(2-tert-Butylphenyl) privalamide	Stigmasterol	L-Proline, methyl ester
Campesterol	α-ylangene	Withanone	Clitorin	N-Butyl-4-methylpyridinium	Beta-Sitosterol	1, 3, 2-Oxazaborolane
Ocoteine	β-Copaene	Withanine	Kaempferol 3-glocoside.		Texasterol	Quercetin
Cathaformine	Isocalamendiol	Somniferine	Quercetin 3-glocoside.		Gamma-Elemene	Genistein 7 Daidzein

Pharmacological Actions Were Reported in Six Plants

The evaluation of the Bioactivity of a plant is very important to use the plant for multiple diseases. A single plant will have the potential to treat various diseases due to the various phytochemical presence. Each chemical constituent is responsible for one or many bioactivities. The bioactivities of each plant with the reported mechanism of action are summarized as follows,

CASSYTHA filiformis

Anti-Pyretic, Anti-Inflammatory, Analgesic

Haffner ‘s tail clip method in rats and the Tail immersion method in micewere used to study the Analgesic Activity of methanol and chloroform extracts of *Cassytha filiformis* against Diclofenac sodium as standard. The antipyretic activity was studied against Paracetamol as standard in ratsby Brewer ‘s yeast-induced pyrexia.

The anti-inflammatory activity was evaluated against Diclofenac sodium as standard in wester rats with carrageen an-induced paw edema. From the results, it was found Chloroform and Methanol extracts of *Cassytha filiformis* have significant effects on these activities [36, 37].

Anti-Hypertensive

The anti-Hypertensive study evaluated ethanolic extract on Male Sprague–Dawley rats. This study confirmed thesignificant antihypertensive effect of the ethanolic extract of *Cassytha filiformis*in the dose of 5 mg/kg [38].

Hepatotoxicity

Studied in mice by treated with ethanol extract of *Cassytha filiformis* orally for 7 consecutive days. Propofol-induced sleep time was measured by sleep onset time and duration of sleep and Serum alanine transience and alanine phosphate activities were measured by ANOVA and ducans multiple range test and Pearson’s correlation and found that the

extract of *Cassytha filiformis* has the reversible dose depending on toxicity [39].

Blood sugar lowering effect
The study was evaluated for Water, Ethyl acetate, and Butanol extracts of *Cassytha filiformis* by alloxan-induced diabetic in 2-3 months old mice against Glibenclamide as control. The initial fasting blood sugar was measured as ≥126 mg/dL. Blood sugar levels were measured before and after the dose administration and data were analyzed using ANOVA and Ducan's multiple range T-Test. From the results, it was found that *Cassytha filiformis* has a significant effect on blood sugar lowering. Butanol extract has more effect than the other two [40].

Anti-Microbial study
This study was conducted by 24 hours broth cultures. Escherichia coli, Staphylococcus aureus, and Salmonella spp were used for the study and found the methanol extract has an Anti-Microbial effect on Staphylococcus aureus and Salmonella spp. *Cassytha* filiformis Linn has Anti-microbial activity against Candida albicans, Staph. aureus, E. coli, andPs. Aeruginosa [41, 42].

ACORUS CALAMUS

Neuroprotective
It was found in an in vivo study using Dawly rats that, β-Asarone is an active principle for that neuroprotective character by saving the hippocampus even next tothe kainic acid lesion [43].

Anti-Memory loss, Anxiety, Oxidative stress
The study was conducted in Wistar ratswith the oral administration of different extracts of the *Acorus calamus* and found that the memory deficits and stresswere prevented by the aqueous fraction of the *Acorus calamus* through controlling oxidative stress and inflammation [44].

Cardioprotective effect
Doxorubicin-induced myocardial activity in Albino Wistar rats was determined with *Acorus calamus* ethanol extract pretreatment. This decreases serum enzyme level and lipid profile near to the normal value and it significantly protects the myocardium from the toxic effect of DOX [23].

Bronchodilator effect
Studied in Guinea-pig trachea and found the *Acorus calamus* extracts have potential airways relaxant constituents in the crude extract [45].

Anti-Fungal
The Antifungal activity was studied using ethanol, Acetone, petroleum ether extracts of *Acorus calamus*on Fusarium oxysporum f. sp lucopersici which can be the reason for losses in tomatoes, and found the *Acorus calamus* has antifungal activity.

The antifungal activity of the β-asarone compound (Methanolic extract of rhizomes has this compound) was evaluated against the yeast strain of Candida Albicans, Saccharomyces Cerevisae, and Cryptococcus neoformans as well as against Aspergillus Niger.

And also the α-and β-asarone compound showed the antifungal effectiveness on the yeast strain of Cryptococcus Gastricus and Candida Albicans as well as fungi strains of Aspergillus Flavus, Penicilliumchrysogenum, Aspergillus Niger, Microsporum Canis [46, 47].

Toxicity
Studied in Wistar rats with acute and chronic administration of the ethanolic extract. Hematological, Biochemical, Pathological, and histopathological changes were not observed [48].

Anti-Obesity
Studied by in vitro assay for the aqueous extract of *Acorus calamus* on Inhibition of Pancreatic lipase testusing p-nitrophenyl butyrate (NPB) as a substrate and found that the extract is inhibiting the pancreatic lipase percent and resulting lipid-lowering activity [47, 49].

Anti-Inflammatory
Studied with DPPH assay and found good anti-inflammatoryproperties. Studies with Cotton pellet granuloma and Carrageenan induced rat paw edema and found a successful effect [50].

Blood pressure-lowering
Studied on Normotensive Anesthetized rats-Sprague Dawly male rats used-Anesthised with Intraperitoneal injection of Sodium thiopental. The *Acorus calamus*extracts (n-hexane, E. A) were found effective in blood pressure-lowering effect [51].

Alzheimer's Disease
Studied in Acetylcholinesterase inhibitor assay and found good results [52]

Biosynthesis
Acorus calamus Rizhome extract used for Silver Nanoparticle biosynthesis and found effective AgNPs which have fulfilled the structure requirement and have anti-bacterial activity [53].

Anti-Convulsant
Studied in Swiss albino mice with MES-induced seizures and found satisfactory [54].

Anti-diabetic
Studied for methanol extracts of *Acorus calamus* by STZ induced diabetic in rats and found potent antihyperglycemic activity [55]

Anti-carcinogenic and anti-angiogenic
The anti-carcinogenic activity was studied with MTT assay and Anti-Angiogenic activity was performed with in vitro tube formation assay and found satisfactory. The results revealed that *Acorus calamus*extracts have anti-proliferative and anti-angiogenic properties on cancer cells [56].

Anti-Viral
The Antiviralstudy was evaluated for ethanol extract of *Acorus calamus*on Mouse kidney cells with induced infection by DENV2. TheDENV2-induced cytopathic effect

and Plaque assay was proving that the extract has Antiviral activity.

Tatanan A which is isolated from the *Acorus calamus* showed effective results in this study [57].

Antibacterial
The Antibacterial activity is measured for crude methanolic extracts against S. aureus, E. coli and found to be effective antibacterial activity. The methanol extract has the compound β-asarone and this compound is having the highest antibacterial effect at various concentrations against the E. coli strain [47].

Withania Somnifera

Anti-Bacterial
Studied by In vitro Agar well diffusion method against Salmonella typhimurium.
Studied by in vivo method with balb/C mice and found satisfactory. Withaferin A is effective against various Gram-positive bacteria growth, acid-fast and aerobic bacilli, and pathogenic fungi in 10g/mL concentration. And Withaferin A is effective against Micrococcus pyogenes var aureus. Withaferin A is effective against the Ranikhet virus [24, 58].

Anti-viral
Ashwagandha water extract showing good anti-viral property in MTT assay with Cell proliferation methodusing isolated lymphocyte cells [59]

Anti-Fungal
Extracts of Chaetomiun globosum EF18, isolated from *Withania Somnifera* as endophytic fungus, which is proved for the effectiveness against Sclerotinia Sclerotinia [60].

Anti-Microbial
The antimicrobial activity of ethanolic and methanolic leaf extract was evaluated using zone inhibition studies and found good antimicrobial properties in methanolic extract than ethanolic extract [61].

Anti-Ulcer
Studied in rats with *Withania somnifera* extracts and found effective in stress-induced gastric ulcer [62].

Anti-diabetic
Studied with diabetic induced rats (by intraperitoneal injection of alloxan) and fed the *Withania somnifera* root-ethanolic extract found that *Withania somnifera* is effective to control diabetes [63]

Anti-Inflammatory
Studied for the Ashwagandha root powder with oral administration on arthritic rats and found that it is actively reducing the arthritis signsand increasing the functional recovery of motor activity as well as radiological score and hence it is effectively decreasing the severity of arthritis. Withaferin A reported for Anti-Arthritic and Anti-Inflammatory activities. Withaferin A gave superior results for adjuvant-induced artistic syndrome in rats without any toxic when compared to hydrocortisone [24, 64].

Anti-Cancer
In vitro cytotoxicity was evaluated for *Withania somnifera* extract (Root, leaves, and stem) against four human cancer cell lines, and found a significant anticancer effect of *Withania somnifera [24, 65]*.

Cardioprotective
The cardioprotective potential was evaluated for Ashwagantha Aqueous-alcoholic extracts on rats that are induced for myocardial mecrosis by isoprenaline against vitamin Eas control. The haemodynamic, histopathological, and biochemical parameters were evaluated, found *Withania somnifera* is effective for cardioprotection [66].

Neurovegetative
Studied in Vivo and Invitro models. In vivo model done with albino rats using *Withania somnifera* extract and found a significant effect on neurodegeneration. In vitro study done by microglial neuronal cultures and co-cultures and found satisfactory [67].

Anti-Convulsant
Studied by using the *Withania somnifera*alcoholic extract in preventing induced seizures models in albino Wistar rats. Withania *somnifera* alcoholic extract shown significant anticonvulsant effect [68]

CLITORIA ternatea

Anti-Bacterial
The Antibacterial activities were measured for the crude extracts of *Clitoria ternatea* on the urinary tract infection triggered by pathogen Proteus mirabilis. The biochemical, morphological, and cultural characteristics were assessed. The zone inhibition was evaluated for various antibiotics by disc diffusion method with ciprofloxacin, gentamycin, and tetracycline as standard. And acetone extract, isopropyl alcohol extract as well as petroleum ether extract of *Clitoria ternatea* leaves were also evaluated and found significant antibacterial activity against Proteus mirabilis [69].

Anti-Fungal
Antifungal activity of petroleum ether extract, chloroform extract, and ethanolic 70% extracts of *Clitoria ternatea* against the fungal skin pathogens Candida albicans and Cryptococcus neoformans were assayed by drop diffusion method by measuring the zone of inhibition. The leaf extracts had stronger action compared to the action of ketoconazole [70].

Anti-Microbial
Studied for the aqueous extracts onthe oral cavity with 3 pathogenic microorganisms-Stertorous mutants, staphylococcus aurens, lactobacillus casei) by using the agar well diffusion method. The results are showing theeffective anti-microbial activity [71].

Anti-Inflammatoryand Analgesic
In vitro study was determined for the ethanolic extract using inhibition of albumin denaturation and membrane stabilization assay. The results were confirmed the Anti-inflammatory effect.

The In-Vivo anti-inflammatory study was evaluated on rats for the flower extracts of *Clitoria ternatea Linn*. The rats were induced with paw edema by carrageenan as well asin-vivo analgesic activity was evaluated for the same extract on rats by Eddy's hot plate method. The results are showing significant Anti-inflammatory and Analgesic properties [72, 73].

Anti-hyperlipidemic
The study was conducted on albino rats using the hydroalcoholic extract of *Clitoria ternatea* seeds. The rats were induced for hyperlipidemia using poloxamer 407. The oral administration of the extract showed significant anti hyperlipidemia properties [74].

Hepatoprotective
The hepatoprotective study was evaluated for the Methanol extract of *Clitoria ternatea* leaf on mice with paracetamol-induced liver toxicity against paracetamol as control. The extract is significantly decreasing thebilirubin levels, ALT, and AST. These biochemical findings are confirmed by the Histological studies by the maximum improvement in the histoarchitecture [75].

Anti-Convulsant and neurodegenerative
The study for the *Clitoria ternatea* methanolic extract was evaluated on rats with induced depression, anxiety, convulsion, cognitive behavior, and stress by PTZ and MES against serotonin and acetylcholine as standards. The results are showing anti-convulsant and neurodegenerative effects [76].

Anti-asthmatic activity
The study was evaluated for the Ethanol extract of *Clitoria ternate*in mice which are induced for leucocytosis and eosinophilia (by milk) as well as degranulation of mast cells (by egg albumin) s. The results show a significant decrease in asthmatic symptoms and prove the anti-asthmatic property [77].

Anti-Cancer
The study was evaluated for the *Clitoria ternatea* methanol extract on mice with induced tumor by DLA injection. The treatment with the extract is decreasing the packed cell volume, viable count, tumor volume.

This treatment increases the life span by increasing the mean survival time and non-viable cell count [78].

WEDILIA chinensis

Anti-Bacterial and Anti-Fungal
The *Wedilia chinensis* Ethanolic and n-Hexane extracts have shown significant antibacterial activities against a few gram-positive and gram-negative bacteria as well as for a few fungi in the agar well diffusion method [79, 80].

Anti-Microbial
Studied with three pathogenic microorganisms in the oral cavity-Streptococcusmutants, lactobacillus casei, staphylococcus aurens) with aqueous extracts using agar well diffu. sion method and found effective anti-microbial activity [71].

Anti-Inflammatory and Analgesic
The Analgesic activity was evaluated for the extracts of *Wedilia chinensis* on mice by the hot plate-induced writhing method as well as acetic acid-induced writhing methods against aspirin as standard.

The anti-inflammatory effectwas evaluated for the extracts of *Wedilia chinensis* on rats which are induced for paw edema with histamine and serotonin, and rats induced with granuloma by cotton pellet methods. The acute inflammation and chronic phase inflammationwere measured against Morphine and Indomethacin as standard and found effective anti-inflammatoryeffects [29, 81].

Anti-Diabetic
The study was evaluated for the *Wedilia chinensis* leaf-methanol extract on mice with alloxan-induced (dose 80 mg/kg) diabetic against glibenclamide as standard and found the antidiabetic effect [82].

Anti-Cancer and Anti-oxidant
The in-vitro study was determined for the essential oils of *Wedilia chinensis* using DPPH and OH scavenging assays and found a significant percentage inhibition.

In vivo study was evaluated for essential oils of *Wedilia chinensis* on cell line implanted cancer-bearing mice and found that the essential oil has good antioxidant properties.

Recently Carvocrol has reported its capacity that it is stimulating apoptosis in prostate cancer cells and carvocrol is an active phytoconstituent in *Wedilia chinensis [83]*.

Neurodegenerative
The study was evaluated for the various extracts of *Wedilia chinensis* on the modified Ellman method to assess the acetylcholinesterase and butyrylcholinesterase inhibitory activity. The aqueous and ethyl acetateextracts exhibited high inhibition against acetylcholinesterase and butyrylcholinesterase. This study confirmed the effect of *Wedilia chinensis* against Alzheimer's disease [84].

Anti-convulsant
Studied in mice that are induced forseizuresby MES and PTZ with Phenytoin as standard. The ethanolic extract is giving equivalent effect as like Phenytoin. This study reveals the anticonvulsant property [85].

Anti-cardiotonic
In the study of isolated frog (Rana hexadactyla. sp) heart with the aqueous extract of *Wedilia chinensis* in 0.4 mL dose (2 mg) against digoxin 0.4 ml (0.2 mg) as standard, it was found that the contraction height was increased without any cardiac arrest in the Kymograph record [86].

CENTELLA asiatica

Anti-Bacterial
Centella asiatica has potential antibacterial activities to both gram-positive and gram-negative bacteria by disc diffusion method [87].

Anti-Microbial
The ethanol, aqueous, and chloroform extracts of *Centella asiatica*wereevaluatedfor bacteria, fungi, and candidausing agar well diffusion and paper disk methods and found strong anti-microbial activities [88].

Anti-Inflammatory and Anti-Oxidative
The ethanolic extract of *Centella asiatica*was evaluated for its Anti-inflammatory studies and Anti-oxidative studies using BV2 cells which are stimulated with lipopolysaccharide and found effective the anti-inflammatory and anti-oxidative properties [89].

Neurodegenerative
The study was evaluated on the aqueous extract of *Centella asiatica* in Sprague-Dawley rats with induced neurotoxicity by MPTP. In the results, it was found that the LPO and PCC levels are reduced as well as the TA level, antioxidant enzyme levels were increased by *Centella asiatica* in the corpus striatum and hippocampusFrom these results it was confirmed that*Centella asiatica* has effectivity to protect the brain from neurodegenerative disorders like Parkinsonism [90].

Anti-Convulsant
The activity was evaluated for various extracts of *Centella asiatica* (n-hexane extract, chloroformextract, ethyl acetate extract, n-butanol extract, and water extracts) on rats that are induced for seizures using PTZ (pentylenetetrazol). The standard was diazepam at 2 mg/kg BW. The results prove that the *Centella asiatica* pretreatment providing the recovery of acetylcholine and acetylcholinesterase levels. This confirms the anticonvulsant activity [91].

For Skin disease
The anti-inflammatory effect and Anti-immunomodulatory effect of the ethanol extract of *Centella asiatica* was evaluated on mice thatwere induced for Atopic Dermatitis by 2, 4-dinitrochlorobenzene. The oral and skin local administration of the *Centella asiatica* controlling the allergic inflammation on the skin [92]

Wound Healing
The main Phytochemical present in *Centella asiatica* reported is Asiaticoside. It is a terpenoid, and due to this action *Centella asiatica* is increasing the collagen formation and angiogenesis, and also Asiaticoside is stimulating the newly formed skin strength. This is revealing the wound healing activity of *Centella asiatica [32]*.

Anti-Dippresent
The total triterpenes from CA have antidepressant effects. This activity was studied in forced swimming mice by calculating the immobility time as well as calculating the amino acid concentration in mice brain tissue [32].

CISSUS quadrengularis

Anti-Bacterial
The in vitro antibacterial activity was evaluated for *Cissus quadrangularis* methanol and ethyl acetate extract against some Gram-negative and Gram-positive bacteria and found significant antibacterial activity [93]

Anti-Microbial
The anti-microbial activity was evaluated for methanol extract in disc diffusion method withavian microorganisms which were isolated from layer chicken i. e. Klebsiella sp., Staphylococcus sp., Escherichia sp., Salmonella sp, Aspergillus sp, and Pasturella sp. Significant Potential antimicrobial activity was reported for Escherichia sp. and the least activity was reported against Aspergillus sp [94].

Anti-Viral
The in-vitro antiviral activity was evaluated for the *Cissus quadrangularis* methanolic extract against HSV type1 and 2, and Vero cells at non-cytotoxic concentration and found good antiviral activity against HSV1 and HSV2 [95].

Anti-Oxidant
The In-vitro Anti-Oxidant studies were evaluated for 50% hydroethanolic extract of *Cissus quadrangularis* stem byin-vitro assays (superoxide radical scavenging assay, hydroxyl radical scavenging assay, and metal chelating assay). And found effective antioxidant properties [96].

Anti-Inflammatory, Analgesic, Antipyretic
The Anti-inflammatory effect was studied in rats which are induced for edema by carrageenan and found that the edema was reduced significantly within 1 hour by the ethanolic extract atall the dose levels.

In acetic acid-induced writhing in rats, the painful stimulus in both phases of the test was effectively reduced by the ethanolic extract.

On yeast induce hyperthermia in rats, the ethanolic extract reduces fever significantly within 2 hrs at higher doses. *Cissusquadrengularis* is reported for triterpenes like α-Amyrin and β-Amyrin which are the potential sources for the anti-inflammatory activities [97, 98].

Anti-Cancer
The anticancer activity was evaluated for the methanol extract of *Cissus quadrangularis*on MG63 cells by cytotoxicity assay (Mossman method). This study confirms the anti-cancer effect of *Cissus quadrenqularis [99]*.

Anti-convulsant
This study was evaluated for the *Cissus quadrenqularis* extract on mice which are induced with pilocarpine Epilepsy using sodium valproate and found that the extract was decreasing the level of MDA and the activity of GABA-T significantly and GSH and GABA levels were increased concerning the standard sodium valproate [100].

Anti-Obesity
The study was evaluated with the aqueous extract by Oil-red O staining on 3T3-L1 adipocytes and found that the adipogenesis/lipogenesis-related genes and proteins expression levels are decreased. This study confirms the Anti-Obesity activity [101].

Anti-Diabetic
The antidiabetic effect was evaluated for the ethyl acetate extract of Cissusquadrenqularis in rats which are induced for diabetes and found that the *Cissus quadrangularis* supplementation made the antioxidant levels to normal as well as significantly improved the insulin sensitivity, oxidative changes, reduced liver damage. The liver Histopathological analysis also supports these results. This confirms the anti-Diabetic activity of *Cissus quadrenqularis [102]*.

Osteoporosis
The study was evaluated for the extract of *Cissus quadrenqularis* on female Sprague Dawley rats were either sham-operated or ovariectomized which are administrated with the extract for 3 months, followed by conducted cytokines and hormones assay as well as several biochemical markers and found that Cisssus quadrengularis is a potential therapeutic agent to treat postmenopausal osteoporosis with no side effects [103].

Bone healing activity
The *Cissus quadrenqularis* contains Anabolic Steroids which are the main source for the bone healing property. As well as it has vitamin constituents also [103].

3. Discussion

The scientific tests are providing the details of various therapeuticcapacities of these medicinal plants beyond their current usage. These plants have significant anti-bacterial, Anti-Microbial, Anti-Fungal, Anti-Cancer, Neurodegenerative, Anti-convulsant, Anti-diabetic, and other diseases except *Cassytha filiformis*. At present Anti-hepatoprotective, Blood pressure lowering effect, Anti-Inflammatory, Antipyretic, Analgesic activities are established for *Cassytha filiformis*, other all the biological activities yet to be studied

It is very important to have a thorough effect investigation of secondary metabolites of these plants and their separation as well as identification. A precise route to be determined to isolate a pure secondary metabolite from these plants followed by detailed clinical studies to be done to specify the multiple therapeutic uses and route of administration. Furthermore, the isolated compounds of these plants can be used for the therapeutic purposes of modern diseases in humans.

4. Conclusion

There are important Phytochemicals reported and isolated from the seven medicinal plants i. e Cathafiline, Cassythine, Asarone, Withaferin A, Withnoloid A and E, Carvocrol, T-caryophyllene, Asiatic acid, Asiaticoside, Amyrin. These phytochemicals support the biological actions of these plants. However, many phytochemicals are also the reasons for the biological properties yet to be discovered from these plants to understand the pharmacology of the plants well. Especially, *Cassytha filiformis*, to be researched more for multiple biological activities.

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