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A REVIEW ON PHARMACOLOGICAL AND PHYTOCHEMICAL SPECTRUM OF "TRADITIONAL MEDICINAL PLANT ADINA CORDIFOLIA" FAMILY-RUBIACEAE

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Abstract

The Yellow Saffron Teak, or Adina cordifolia, is a member of the subfamily Cinchonoideae in the family Rubiaceae and is native to the tropical regions of southern Asia, ranging from India and Sri Lanka to southern China and Vietnam. It is a large deciduous tree found in deciduous woods over most of India and up to an elevation of 900 meters in the subhimalayan belt. The ancient medical community used on Adina cordifolia to treat persistent cough, jaundice, abdominal pain, appetite, and stomach enlargement. Because of its astringent and constipating properties, the Roots may be used to treat diarrhea and dysentery. The bark has several therapeutic uses, including as an aphrodisiac, diuretic, demulcent, vulnerary, and tonic. The pitta imbalance, skin illness, strabismus, gastropathy, fever, and burning feeling are all helped by this. The buds may be used to counteract the effects of snake venom, the blooms can alleviate a headache, and the leaves can be used as a natural disinfectant. These are also used on wounds, boils, and hemicrania to alleviate the symptoms. There is a wide variety of medical uses for Adina cordifolia. It possesses antimicrobial, anti-inflammatory, anti-aging, anti-pain, and anti-fertility properties. The chemical composition, pharmacological investigations, and biological research on Adina cordifolia plants were given the most attention in this study. Since this kind of medicine is controversial and has little study, this dissertation will be helpful in encouraging scientists to coordinate their efforts.

Keywords: Adina Cordifolia, Phytochemistry, Pharmacology, Medicinal uses.

INTRODUCTION

Medicinal plants, which are found in every region of the globe, have been utilized since ancient times as a primary source of remedies. WHO reports that 80 percent of people in underdeveloped nations are still reliant on locally sourced medicinal herbs for their basic healthcare requirements. There are around 550 tribal tribes in India, classified into 227 ethnic groups. These people live in over 5,000 villages spread throughout a wide variety of forest and flora types. India is one of the eight primary areas of genesis and diversity of domesticated taxa due to its rich history of traditional medical systems and usage patterns of many plants. Being one of just twelve "mega diversity" nations in the world. In addition, the advantages of phytopharmacy and current therapeutic plants are widely acknowledged across the world. Hold an important place in the fields of botany and medicine1 . There is a great demand for phytochemical research into the many plant species that are widely utilized as medicines. There are probably still a lot of unidentified plant species out there with useful

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medical properties. Because of this, we decided to conduct phytochemical analysis of plants as part of the study.

The raw medications that are extracted from medicinal plants come from a broad variety of plant components with their own unique therapeutic effects. Leaves, roots, stems, flowers, fruits, twig exudates, and altered plant organs are all put to use. While many herbal companies rely on vast amounts of the raw pharmaceuticals that are gathered and sold on the market,Herbal medicine, which employs plants with therapeutic properties or medications derived from plants, is used to treat and cure many medical conditions. Herbal goods have become a byword for security in today's world, as synthetics are seen as harmful to both humans and the natural world. Although herbs had been valued for their therapeutic, culinary, and fragrant properties, their cost had increased. All indigenous people's traditional medicine, including ayurveda, homeopathic, Unani, naturopathic, and traditional Oriental, relies heavily on herbal treatment.

Plants belonging to the Rubiaceae family contain the secondary metabolites that are employed in medicine. Among the gentianales, the family Rubiaceae is the most numerous.

This branch of the gentianales family tree is also the oldest. Trees, shrubs, and, rarely, herbs all make up the about 450 genera and 6500 species that make up the family Rubiaceae. The Adina Cordifolia plant is a member of the Rubiaceae family.

BOTANICAL DESCRIPTION

Botanical Name : Adina cordifolia (Roxb.)

Family : Rubiaceae

Synonym : Haldina Cordifolia (Roxb.)

Local name : Kadami, Haldu

English name : Yellow Teak, Saffron Teak.

Description of Morphology

The leaves of this large deciduous tree can be up to 25 centimeters in diameter, and they are broadly oval or circular in shape, acute at the apex, heart-shaped at the base, slightly hairy especially when young, green or tinged with red or pink, and they are nerved with a strong one running from the base to the tip of the leaf and 5 to 6 pairs of lateral nerves, which unite in a wavy line near the margin of the leaf. Each branch produces two leaves at once, with the stalks of these leaves joined by a pair of stipules. Stipules are the two leaf-like structures that may grow up to 2.5 centimeters in length and serve to enclose and protect the very immature leaves and shoot apex. When the stipules fall off, they leave behind two distinct lines, one on each side of the branch. Stem length for leaves is between 5 and 10 centimeters. The tiny blooms are a dull yellow or yellowish tint with a pinkish hue, and they bloom in clusters about 2 to 3 centimeters wide. When the little flowers fully bloom, the styles—which act as a halo around the flower's center—are the ones that stand out most. The tiny, very solid balls of fruit are black or nearly black when mature. The tree loses its leaves in February and stays bare until May or June, at which point the stipules covering the buds are quite obvious. From

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June through August, flower balls may be seen at their peak. After the fruit main falls off the tree around the beginning of June the following year, the fruit-heads, which are approximately 12 mm wide and look black, may be washed away by the monsoon rains in order to make room for the new flower balls.

Figure No.1: Adina cordifolia

HERBAL DRUG RESEARCH TODAY

Finding single entity and multi-component bioactive natural compounds that show promise as leads for the creation of novel medicines that meet unmet therapeutic requirements is the ultimate objective of the herbal drug R&D program. To rediscover the drug discovery process, targeted and secure natural products research will substantially benefit from the search engine that is traditional knowledge-driven drug development. More than 750,000 plant species exist on our planet. Only a few number of medicinal plants have been the subject of rigorous scientific investigation. Phytochemical and biological screenings have been conducted on only around 15% of these.

REVIVAL OF TRADITIONAL MEDICINE

There is a contemporary uptick in the significance placed on indigenous cultures' historical and experiential knowledge of therapeutic herbs. Herbal medicine is experiencing a renaissance for a number of reasons: first, people are becoming more aware of the narrow scope of synthetic pharmaceutical products for managing major diseases; second, there is a pervasive notion that 'green medicine' is less risky, more easily accessible, and cheaper than its synthetic counterparts, many of which have undesirable side effects. There has been a significant uptick in the interest and usage of medicinal plant products, particularly in industrialized nations, during the last decade. An estimated 80% of the global population uses traditional systems of medicine as their major source of healthcare; these systems often include the use of plants rather than other natural resources.

LITERATURE REVIEW

Deep Soren, A., & Bawitlung Lalthanpuii, P. (2022), Even in modern times, rural residents of India have only access to traditional medicine. Several groups continue to use their age-old healing practices unaffected by the progress of modern medicine. Since their own traditional

practitioners are readily available, accessible, and reasonably priced, tribal groups often seek advice from and consult with them. These are thought to be both effective and risk-free. The Mizo people of India's northeastern state of Mizoram utilize botanicals for medicine. Their rituals are one-of-a-kind and are often performed by community elders or traditional healers. Studies on the effectiveness and safety of certain plants used in traditional medicine have provided scientific confirmation of their validity. However, there is still a sizable amount that has to be discovered and shown effective. This text details the Mizo people of Mizoram's traditional medical system, including the known and unstudied medicinal plants employed within it. While there are undoubtedly more effective treatments waiting to be found, this analysis describes the vast majority of those now in use.

(Wang S, Gao X, Sun Q, Zhu Y, Qin L, Zhu B., 2022), Actinidia eriantha Benth. (known in China as Maohuamihoutao) is a plant that has been used for a long time as a heat-clearing medication by the She ethnic minority group in China. Stomach cancer, colon cancer, cirrhosis with ascites, chronic hepatitis, leukemia, rectal prolapse, hernia, and uterine prolapse are just few of the conditions it has been used to treat. Partially supporting the folk usage of A. eriantha to treat several malignancies, pharmacological research gives evidence for this application. Anti-cancer, immunoregulatory, anti-angiogenic, neuroprotective, anti-inflammatory, and antioxidant activity are only some of the pharmacological effects seen in crude extracts and relatively pure components of A. eriantha. More than 104 different chemical compounds, including terpenoids, alcohols, phenolics, aldehydes, organic acids, flavonoids, glycosides, ketones, and glucoside, have been isolated from A. eriantha. According to the available research, the polysaccharides in A. eriantha are responsible for the majority of the plant's medicinal actions. More research is needed to understand the synergistic and antagonistic effects of these chemicals, as well as their modes of action and structure-function correlations. Consequently, we recommend that future research on A. eriantha should examine its long-term toxicity and effectiveness in vivo, as well as its multi-target nature utilizing network pharmacology methodologies.

Chinnasamy P, Arumugam R, Ariyan S. (2019), Sathyamangalam wildlife sanctuary, Tamil Nadu, India's indigenous people's ethno-botanical documentation has been studied for the first time. Adjuvant usage of 61 medicinal plants for hitherto unrecognized conditions of the skin, urinary tract, and gut has been described. This research has the potential to encourage the next generation to preserve and revive ancient medical practices. The goals of this research were twofold: (1) to record indigenous knowledge; and (2) to conduct a quantitative analysis of that information by calculating its Use value (UV), Informant consensus factor (ICF), Index of agreement on remedies (IAR), Relative frequency of citation (RFC), and Cultural Importance index (CII). (3) In silico research verifying ethno-botanical data for biological activity and toxicity. A total of 61 species were documented as being used to treat various diagnoses. There is astonishing novel utilization of medicinal plants to specific conditions, as shown by the acquired medical knowledge from ethnic groups. Our in silico tests showed a correlation between the conventional medication and their bioactive, lending more credence to the former. The history and culture of an ethnic group's traditional knowledge holders are inextricably intertwined. Traditional plant-based medicine is also implied by this research. The discovered bioactivities of plants warrant further investigation into their potential medicinal applications.

Anuradha Mishra, Saikat Sarkar, and Pragyandip Parthasarathi Dash (2019), Illnesses are the constant companions of living. In his quest to cure diseases and extend his life, prehistoric man was inspired to learn more about his environment. As a result of his efforts, man's first

medicines were derived from plants. Even now, 80 percent or more of the global population uses only conventional medicine. Traditional remedies are recommended by the World Health Organization because they are safe, effective, and inexpensive. Many of the herbs and spices we use in our cooking and seasoning are also utilized as natural cures. Spices have therapeutic characteristics that may be used in herbal medicines to treat minor illnesses like the common cold, cough, etc. This important plant has several medicinal applications, which piqued our curiosity, and it has also provided researchers with a springboard into new areas of inquiry. The plant Haldina cordifolia, which has several uses, may be useful in the quest for new therapeutic compounds.

Yogesh Rokade, Dr. Sunil P. Pawar (2013), several medical treatises advocate several medicinal plants as a rich source of medications for the therapy of various ailments. Traditional practitioners have employed Adina Cordifolia (Roxb.), a plant native to India, Ceylon, Thailand, and Burma, to cure chronic cough, as well as jaundice, stomachache, appetite, and stomach bloating. Because of its astringent and constipating properties, the Roots may be used to treat diarrhea and dysentery. The bark has several medicinal properties, including those of being astringent, bitter, acrid, vulnerary, diuretic, demulcent, aphrodisiac, and tonic. It helps with wounds, ulcers, strabismus, skin illness, gastropathy, fever, and a burning feeling when pitta is vitiated. Adina cordifolia is mentioned in the scientific literature to having several therapeutic uses. It has been used as an antifertility agent, an anti-inflammatory, and an anti-nociceptive. This document details the scientifically supported data on the phytochemistry, pharmacological activity, and medicinal use of various plants.

HISTORY OF ADINA CORDIFOLIA:

Adina cordifolia's illustrious past dates back to the time of the Vedas, Puranas, and Samhita. The roots and stems of the Adina cordifolia plant are mentioned in many vedic period texts. Dantadhavana made advantage of it. Adina is referenced in a number of ancient texts, including the paraskaraGuhyasutra 1/21, the Atharvaparishista 26/5/1–4, the Yajnavalkyashiksha 34, the Mandukishiksha 4/1, and others. PanineeyaAsthadhyayi, PathanjaliMahabhashya, Gubhilagruhya sutra, and Shulwa Prathishakhya all refer to it by its Sanskrit name, Nipa.

DISTRIBUTION:

This species is native to Southeast Asia. It may be found in the following countries: India, Burma (Myanmar), Sri Lanka, Bangladesh, Nepal, Thailand, South China, Bhutan, Myanmar (Myanmar), Vietnam, and Malaysia. All across India (save for the desert districts of Rajasthan), it inhabits deciduous woods up to an altitude of 900 m in the sub-Himalayan tract. It may also be found in the South Indian jungles. It thrives on well-drained soil at a low altitude (between 300 and 1000 meters). Soil pH between 5.5 and 6.5 is ideal. The ideal annual temperature range is between 250 and 350 degrees Celsius, while the ideal annual rainfall range is between 1,000 and 2,000 millimeters. It can't handle cold weather. Up to an altitude of 1000 meters above sea level (MSL), the tree may be found growing on a wide variety of geological substrates.

TABLE NO.1: TAXONOMIC CLASSIFICATION

Kingdom	***Plantae***

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Class	***Magnoliopsida***
Sub-class	***Asteridae***
Superorder	***Gentiananae***
Order	***Gentianales***
Family	***Rubiaceae***
Subfamily	***Cinchonoideae***
Genus	***Adina***
Specificepithet	***Cordifolia***
Botanicalname	***Adinacordifolia*(Roxb.)Benth&Hook.F.**
Synonym	***HaldinaCordifolia*(Roxb.)**

Plants of the family Rubiaceae produce secondary metabolites that are used in medicine.The family Rubiaceae has the most members of any family in the genus Sagittaria. This branch of the gentianales family tree is also the oldest. Trees, shrubs, and, very rarely, herbs7-10 are all included in the roughly 450 genera and 6500 species that make up the family Rubiaceae. The Adina Cordifolia plant is a member of the Rubiaceae family.

Genus: Adina cordifolia, is the sole species in the genus Haldina.

TABLE NO.2: CLASSICAL CATEGORIZATION OF ADINA CORDIFOLIA

S.No.	Classicaltexts	Gana&Varga
1.	***BhavprakashNighantu.***[26]	***PushpaVarga***
2.	***MadanpalaNighantu.***[27]	***VatadiVarga***
3.	***NighantuAdrash.***[28]	***ManjisthadiVarga***
4.	***RajaNighantu.***[29]	***PrabhadradiVarga***
5.	***DravyagunaVijanam.***[30]	***JwarghnadiVarga***

TABLE NO.3: VERNACULAR NAMES OF HARIDRU

Sr.No.	Language	Names

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1.	**Sanskrit**	**Haridru**
2.	**Hindi**	**Haldina**
3.	**Bengali**	**Kelikadamba**
4.	**Marathi**	**Hed**
5.	**Gujarati**	**Haldarvo**
6.	**Tamil**	**Manjkadamba**
7.	**Urdu**	**Halnd**
8.	**EnglishName**	**YellowTeak,SaffronTeak**

USES:

•Fresh bark is ground with brown sugar and taken internally for stomach-ache.

- Bark and leaves are used for cholera, cold cough, fever, headache, Scars and skin yellowish of body, urine complaints.
- Laves are used on cough and cold.
- Fresh stem bark juice is taken in rheumatism.
- Latex is applied on aching tooth.
- Stem bark used on fever.
- Leaves are applied over swollen portion to remove pain and swelling.
- Bark is used as a antibacterial, eczema, Scabies, Bark paste is applied to eczema, Scabies, or bacterial infections on the skin

CHEMICAL COMPOSITION OF "Adina cordifolia":

In addition to tannins, the yellow naphthaquinone pigment adinin was extracted from the heartwood. Adifoline was formerly known as adinin, but after more research it was shown to be an alkaloid of the Bcarbolineseries and the name was changed to reflect this. Cordifoline, benzoic acid, B-sitosterol, and umbelliferone were also found to be present. 7,4-dimethoxy-5-hydroxyflavanone and 5,7-dimethoxy-4-hydroxyflavanone were found to be the flavanones extracted from the heartwood. In addition to b-sitosterol, the heartwood provided many saturated aliphatic hydrocarbons. These included nheneicosane, n-tricosane, n-pentacosane, and n-pentatriacontane. Incision of the trunk yields theoleoresin that contains between 5.2% and 6.8% essential oil. The presence of alkaloids in the stem bark was discovered in an initial chemical analysis. A novel coumarin glycoside, adicardin, identified as 7-apiglucoside of umbelliferone, was isolated from an ethanolic preparation of root bark.

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PHYTOCOMPOUND IN "Adina cordifolia":

Identification of phytocompounds was based on the principles of molecular weight (MW), retention time (RT), molecular formula (MF) and concentration (peak area%).

A total of 66 constituentswere identified in the study contributing

- 61.74% of the chloroform extract,
- 80.42% of the ethyl acetate extract,
- 60.88% of the acetonic extract,
- 45.59% of the methanolicextracts.

The dominating constituents in respective leaves extracts of "Adina cordifolia" were:

- Transsqualene (15.4-42.1%),
- Vitamin E (2.9-5.8%),
- Phytol (1.1-9.42%),
- Neophytadiene (2.0-2.4%).

TABLE NO.4: THE PHYTOCOMPOUNDS IDENTIFIED IN LEAF OF "A. CORDIFOLIA" IN DIFFERENT SOLVENTS

Chloroformextract	Ethylacetateextract	Acetonicextract	Methanolicextracts
Tetradecanal(0.93%)	Tetradecanal(1.09%)	Phenol(7.33%)	Phenol(1.14%)
Neophytadiene(2.46%)	Neophytadiene(2.05%)	Neophytadiene(2.09%)	Naphthalene(1.16%)
Trans-squalene(42.13%)	Trans-squalene(15.42%)	Trans-squalene(27.44%)	Epiglobulol(3.23%)
Phytolisomer(2%)	Phytolisomer (9.42%)	Trimethylsilylpalmitate (3.36%)	Caryophyllenoxide (4.14%)
Ergost-5-en-3-ol(3.38%)	Gamma.-sitosterol(4.11%)	Phytolisomer (1.18%)	Loliolide(1.32%)
VitaminE(4.22%)	VitaminE(5.84%)	VitaminE(2.99%)	Pentyloctanoate(3.44%)
Campesterol(1.71%)	Hexadecanoicacid methyl ester(1.10%)	Campesterol(1.05%)	Behenylbehenate(6.53%)
Naphthalene(3.48%)		Tetradecanal(0.68%)	

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		Naphthalene(3.77%)	

PHARMACOLOGICAL AND BIOLOGICAL STUDIES:

Anti-ulcer-

An unusual H+/K+ ATPase inhibitory activity was discovered in A. cordifolia, which was further tested for its anti-ulcer potential. In the case of Adina cordifolia, four chemicals extracted from the plant's stem were found to be stigmasta.-5, 22-diene-3P-O-arhamnopyranosyl-(1-4)on the basis of spectral and chemical data, -P-dxylopyranoside, a-amyrin, octacosanol, and naringenin-7-methyl ether-4'-O-a-rhamnopyranoside.

Bacillus anthracis, Bacmycoides, Bacsubtilis, Pseudomonas sp., Salmonella paratyphi, Staphylococcus albus, Xanthomonascampestris, and Xanthmalvacearum were all killed by the crude extract of the bark. 20,39,44 The flavone extracted from the heartwood showed moderate antifungal and antibacterial action against Aspergillus fumigatus and Cryptococcus neoformans and wide range antibacterial activity against Vibrio cholerae and Neisseria gonorrhea.

Both the acetone (AEAC) and water (AQEAC) extracts of Adina cordifolia were tested for their hepatoprotective effects against ethanol-induced liver injury in Wister rats. Both AEAC and AQEAC, at a dose of 500 mg/kg bodyweight, showed a hepatoprotective effect by significantly lowering serum levels of glutamate pyruvate transaminase (SGPT), glutamate oxaloacetate transaminase (SGOT), alkaline phosphatase, and total bilirubin while simultaneously raising total protein levels. Histopathological analyses of liver tissue also provided support for the hepatoprotective action. Compared to regular drugsilymarin, AEAC and AQEAC have similar results.

When tested for antimalarial efficacy in vivo and in vitro, an alcoholic extract of the stem bark was shown to be ineffective against the NK 65 strain of plasmodium Bergheim.

Anti-oxidant Property- Extracts' antioxidant activity was quantified by measuring their IC50 values (mg/ml) and percentages of suppression of DPPH radicals. From 20.39 to 38.96 g/ml, IC50 values were observed. In terms of gallic acid equivalents, the total phenolic content varied from 17.48 to 20.83 mg/g of dry extract weight. In terms of quercetin equivalents, total flavonoid concentrations ranged from 17.49 to 22.48 mg/g. Total phenolic content and antioxidant activity of plant extracts were shown to be significantly correlated on a linear scale. The plant species Adina cordifolia(Roxb.) has the potential to be a very valuable natural plant source of antioxidants.

When given to female rats for 5 days after mating, the ethanolic extract of the dried leaves did not show antifertility action (anti-implantation and abortifacient) on days 10 and 14.

Hydro-alcoholic extract of Adina cordifolia(Roxb.) leaves exhibited antidiabetic action in alloxan-induced diabetic mice at 250 and 500 mg/kg dosages.A significant reduction in blood glucose levels was achieved using glibenclamide (10 mg/kg, subcutaneously) as the gold standard. At 0, 2, 4, and 6 hours after administering the plant extract, the animals' blood glucose levels were measured using a glucometer and glu-oxidase peroxidase reactive strips. The blood sugar level was dramatically lowered after treatment with a 500 mg/kg dosage of hydro-alcoholic extract of Adina cordifolia(Roxb.) leaves. Hydro-alcoholic extract of Adina cordifolia(Roxb.) leaves caused a modest reduction in blood glucose level, but only at lower

dosages (250 mg/kg). Alloxan-induced diabetic rats showed a dose-dependent reduction in blood glucose level compared to controls. According to the results of this research, the antidiabetic effect of a hydro-alcoholic extract of Adina cordifolia(Roxb.) leaves was statistically significant.

Adina cordifolia methanol extract was tested for its anti-proliferative effects on several cell lines. At 370 degrees Celsius, 5% carbon dioxide, 95% air, and 100% relative humidity, 5 103 cells were planted in 12-well plates with corresponding media. Adina cordifolia, extracts of varying strengths (0-100 g/ml) were added after 24 hours. Each cell's media was changed out after 72 hours of incubation with new medium containing 5 mg/ml of MTT. After 3 hours, the absorbance of the dissolved Formosan product of MTT reduction was measured using a multi-plate reader. By graphing the proportion of survivors against the extract concentration, the IC50 values may be determined.

PHYTOCHEMICAL AND PHARMACOLOGICAL OVERVIEW

Adina cordifolia root and bark13 include the chemical components oleoresin, essential oil, cellulose, and beta sitosterol. Adina cordifolia bark powder was dried in the shade, then the ethanolic extract was taken from the bark and fractionated using various solvents. The hepatoprotective effects of ethanol extract fractions were tested in wistar albino rats exposed to CCl4-induced hepatotoxicity. Biochemical criteria such as serum transaminases (SGOT and SGPT), alkaline phosphatases, total protein, and total bilirubin were used in the treated groups, whereas morphological markers such as change in liver weight and liver volume were used to assess the extent of hepatoprotectivity. Serum transaminases, alkaline phosphatases, total protein, and total bilirubin were all restored, demonstrating the ethanol extract and butanol fraction's potent hepatoprotective efficacy in comparison to that of CCl4. The biochemical data demonstrating the hepatoprotective activity of these two fractions is further supported by the histopathology of the liver tissue. Improvements in hepatocyte physiological parameters corroborate the ability of Adina cordifolia ethanol extract and butanol fraction to restore hepatocyte integrity. Alkaloids, flavonoids, saponins, terpenes, tannins, and carbohydrates14 have all been identified by phytochemical analysis of the ethanolic extract and its four fractions. Adina cordifolia, a member of the family Rubiaceae, was tested for its hepatoprotective effects against ethanol-induced liver injury in Wister rats using both acetone (AEAC) and aqueous (AQEAC) extracts. Both benzene and ethyl acetate extracts of Adina cordifolia root bark showed antiamoebic action (IC50 values of 2.92 and 2.50g/ml, respectively). As an insect antifeedant against the poplar defoliator Clostera cupreata (Lepidoptera: Notodontidae), acetone and alcohol extracts of bark and roots of Dalbergia stipulacea, leaves of Eucalyptus hybrid and Adina cordifolia, ursolic acid, and bryonolic acid were studied. Over 92% of poplar leaves were protected against the poplar leaf beetle thanks to ursolic acid, which was isolated from an extract of Eucalyptus hybrid leaves. Next came extracts of D. stipulacea bark in acetone, A. cordifolia leaves in alcohol, bryonolic acid, and ethanolic leaves of Eucalyptus hybrid. Some pathogenic bacteria were only slightly affected by the extracts of Adina cordifolia, Asparagus racemosus, Aegle marmelos, Cassia Tora, Dillenia pentagyna, and Valeriana wallichii (5-8mm). Seven-hydroxycoumarin and seven-beta-D-glucosylcoumarin were successfully extracted. With the addition of aluminum chloride, umbelliferone was transformed into 7-acetoxycoumarin, which in turn yielded 7-hydroxy-8-acetylcoumarin. Different thiosemicarbazide derivatives of 7-hydroxy-8-acetylcoumarin were synthesized to form a novel class of thiosemicarbazones. Seven-methoxycoumarin, a methoxy derivative of umbelliferone, was also synthesized.

The antiamoebic activity of each chemical was then evaluated individually thereafter. Adina

cordifolia bark's anti-inflammatory properties were investigated. conducted research Adina Cordifolia bark extracts in petroleum ether and ethyl acetate were tested for their anti-inflammatory and analgesic properties. The antimicrobial activity of an Adina Cordifolia extract studied in dichloromethane and methanol has been shown in laboratory tests. Adina Cordifolia has a novel Indole alkaloid, isolated from its heartwood. Researchers looked studied the stem of Haldinia cordifolia to see whether it has any antiulcer properties. The chloroform extract was fractionated using an enzyme test to isolate the active ingredient, 7-hydroxycoumarin, which exhibited intriguing HqrKq ATPase inhibitory activity23. Analysis of the preliminary pharmacology of Adina cordifolia24 wood acetone extract fraction. Spectral and chemical evidence25 confirmed that four substances obtained from Adina cordifolia's stem were stigmasta-5, 22 - diene -3- O-rhamnopyranosyl-(1D-xylopyranoside, -amyrin, octacosanol, and naringenin-7-methyIether-4′- - L4). Analysis of Four chemicals isolated from the stem of Adina cordifolia were identified as stigmasta-5,22-diene-3P-O-a-rhamnopyranosyl-(1-4)-P-Dxylopyranoside, a-amyrin, o-ctacosanol, and naringenin - 7 - methyl ether - 4' - O - a -rhamnopyranosoinde the basis on spectral and chemical evidence.

CONCLUSION

Adina cordifolia, a member of the Rubiaceae family, was the focus of this study. Particular attention was paid to the literature on the plant's pharmacological and phytochemical properties. After extensive research and a review of the relevant literature, it became clear that the leaves of this plant have received very little attention. Adina cordifolia, a medicinal plant used for centuries, is in high demand because of the various conditions it can effectively cure. This research aims to provide information on the potential for illness prevention and treatment offered by Adina cordifolia and its ingredients. We may infer from this study that the reviewed findings are meant to pique the interest of researchers interested in developing novel medications from Adina cordifolia and its chemical components. We may look forward to further clinical analyses of the separated chemicals and their potential usage in the future, including as adjuvants to existing treatments. More study into Adina Cordifolia and its pharmacological properties is warranted, as is continuing our focus on natural heritage and its valuation.

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