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IDENTIFICATION AND QUANTIFICATION OF PLANT EXTRACT MURRAYA KOENIGII (CURRY LEAVES)

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ABSTRACT

Since the dawn of civilization, plants have been one of the most significant sources of medicines. The demand for plant-based treatments, health products, pharmaceuticals, dietary supplements, and cosmetics is increasing. Murraya koenigi, also known as the curry leaf tree, is a multifunctional tree that may be used to treat a variety of ailments. The goal of this study is to provide an overview of the chemical elements detected in Murraya koenigü leaf extract, with an emphasis on their pharmacological effects. In two different solvents: water and methanol, leaf extracts were employed to undertake qualitative and quantitative phyto chemical screening. The researchers wanted to see what phytochemical components were present in curry leaf extract. According to spectrum phytochemical analysis, the extracts included glycosides, alkaloids, oils, saponins, cardiac glycosides, phenols, Terpenoids, and flavonoids.

KEYWORDS Column chromatography -Liquid Chromatography Mass Spectrum – LCMS, Gas Chromatography Mass Spectrum -GCMS,

INTRODUCTION

INDIA is regularly regarded with the aid of using considerable biodiversity of medicinal vegetation. Among them MurrayaKoenigii have a plenty of bioactive precept because of which vegetation has been demonstrated because the medicinally vital plant however least or no interest received with the aid of using the scientist. Murrayakoenigii is demonstrated because the herbal medicinal plant. [1] There are one-of-a-kind kinds of MurrayaKoingii because of which they're found because of the beneficial plant inclusive of extract, crucial oil , or immediately use because of the presence of following energetic constituent

bismahanine , Murrayanine, murrayafoline-A , bi- Koeniquinone –A, bismurrayaquinone, Quinone A and koenigine- quinone B for healing cause with the aid of using peoples[2 to 5Many pharmacological therapies, such as digitalis, vinblastine, aspirin, and quinine, have plants as their source of origin, such as foxglove, willow bark, and quinine bark. Secondary metabolites, such as alkaloids, flavonoids, terpenoids, vitamins, tannins, and other secondary metabolites, play a critical role in the therapeutic properties of medicinal plants..[6All of the plant's secondary metabolites have a physiological influence on the frame, improving it at different levels and making it disorder-free. Murrayakoenigii, a member of the Rutaceae family, is a tropical plant that blooms in the spring, summer, and throughout the rainy season in all parts of the tropical world up to a height of 1500 to 1665 feet above sea level. [7] Curry leaf in English, Mitha Neem in Hindi, Karuveppilei in Tamil Nadu, and Surabhinimba in Sanskrit are some of the other names for it Curry leaves include calcium, phosphate, iron, and vitamins C, A, B, and E, among others. It has beneficial properties and aids in blood sugar regulation while also improving digestion.

The leaves are light, robust, and have a weak flavour. Even after drying, certain features, like as flavour, taste, and therapeutic properties, will remain. The purpose of this study was to look into the phytochemical features of curry leaf dry powder

MEDICINAL PROPERTIES

Curry leaves are a popular leaf spices used in very small quantities for their distinct aroma due to presence of volatile oil and their ability to improve digestion" let food be your medicines and let medicines be your food" Herbal and natural product of folk medicines, curry leaf use in many of the Indian Ayurveda and unnani prescriptions.

Plants are one of the most important sources of medicines the medicines plants is rich in secondary essential oils of therapeutic importance. The importance advantages claimed for therapeutic uses of medicinal plant in various aliment are their safety besides being economical, effective and their easy availability Recent studies of curry leaf have shown these leaves to posses anti diabetics, anti oxidant. They are also good for hair. Curry leaves take care of indigestion, stomach usual due to excessive acid secreation in stomach, diarrhea and other problem

❖ INTRODUCTION OF TERPENOIDS

Terpenoids are the oldest known BioMolecules, having been identified in 2.55 billion-year-old sediments. They have the most chemical diversity and variability among plant secondary metabolites. Terpenoids' diversity may be compared to the variety of organic sports found in nature, making them a popular tool for both traditional and contemporary human exploitation. Terpenoids are an incredibly significant chemical for the flavour and perfume industries since they provide a wide range of wonderful scents, ranging from floral to fruity to woody or balsamic overtones. In fact, Terpenoids are predicted to grow by 3.7% this year, reaching $5.3 billion in the United States alone. Along with the present literature, the most current patents on the manufacturing and extraction of Terpenoids, which are commonly used as herbal flavouring ingredients in the food business, are being evaluated.Terpenes are the world's oldest macromolecules, having been identified in 2.5 billion-year-old sediments [14, 15]. With about 40000 distinct systems recorded to date [16], they are the most varied family of herbal compounds. If plants, fauna, and microbiology species were eliminated, this enormous 'Chemodivesity' may be considered [17].everal terpene as well as other oxygenation opposites, known as Terpenoids, usually linked to flora's number one metabolisms, where they perform a variety of roles in mobile function and maintenance. Terpenes, on the other hand, have been found as bioactive molecules of flora in a variety of structural variants, even those known or believed to have specialised functions in mediating negative and helpful connections between organisms in their environment. Terpenoids, for example, are a major aspect of pungent floral and fruit smells, which have developed to attracted insects and germ process in the form, allowing you to maximise your fertilisation costs and survival. As a reason, both exclusion of a strong odour may have a considerable influence on the production of a particular crop.Terpenoids' diversity is mirrored in nature's many organic sports, making them a widely utilised product in both traditional and contemporary human usage [18]. The use of such substances has infiltrated human society as a result of Egyptians' substantial contribution to the construction of first-class life. [19]. Terpenoids from plants have a wide variety of uses in human civilization. Because of their ability to operate as flavouring and fragrances in pharmaceuticals, they've been employed in the medical, food, and cosmetic industries. To get a sense of such financial significance of such chemicals now, consider that market for tastes and fragrances in the United States is predicted to climb 3.7% annually to $5.3 billion in 2012[20].

Terpenoids are the principal constituents of herbal extracts, and they are frequently used as flavouring agents [21–24] and for separating flavouring substances[25–30].

 MATERIALS AND METHOD

:

Plant source collection (Curry leaves)

To ensure that these were clean, they were carefully cleaned.Get rid of the filth and dust. Then dry in the shade until it is completely dry.preserving medicinal properties The leaves had dried out.With the use of a mixer grinder, the material was crushed. This curry powder is used to make curry sauce.leaves were kept in an airtight container and utilised later.

Extract preparation:

The experiment was conducted in three solvents in Aqueous and methanol 1 gram of plant source was dissolved in 1 litre of water.70 percent concentration solvent in 25 mL (ethanol and methanol)The three prepared solutions were then maintained for 24 hours.In closed tubes at ambient temperature. Centrifuge after 24 hours

2. Extraction of dry curry leaves in methanol: -

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3 Extraction of fresh curry leaves ın aqueous

The examination is done in the presence of an aqueous solvent. 100 grammes of plant material is dissolved in 300 millilitres of 70% aqueous solvent. After hitting the solvent on the Hot Sun Burner, the solvent is removed to half its original volume, and then the solvent is cooled properly the all way down to room temperature.The solvent was then filtered through watt man clean out paper and stored in an airtight vessel for further examination

4. Extraction of fresh curry leaves ın methanol

The examination is done in the presence of methanol solvent. 100 grams of plant material is dissolved in 300 millilitres of 70% aqueous solvent. After hitting the solvent on the Hot Sun Burner, the solvent is removed to half its original volume, and then the solvent is cooled properly the all way down to room temperature.The solvent was then filtered through watt man clean out paper and stored in an airtight vessel for further examination

× IDENTIFICATION TEST FOR TERPENOIDS

2 mL chloroform, 2 mL concentrate sulfuric acid, 3 mL aqueous solution The creation of a red brownish colour revealed the presence of Terpenoids

❖ ISOLATION METHODS

Column Chromatography: -

So because desk attached segment and solvent were employed as cellular segments, column chromatography was performed using silica gel F254 (60-120mesh). The ethyl acetate fraction of A L.procumbens was eluted using n-Hexane, n-hexane: ethyl acetate, acetate: methanol(100:90, 90:10, 80:20, 70:30, 60:40, 0:100, 95:5, 90:10, respectively)within the rising order of polarity to get 7 fractions. The LC-MS was used to identify the fractions of the isolation column.

× Liquid Chromatography Mass Spectroscopy

A waters ACQUITY device (waters, milford, ma, usa) was used to analyse the samples, which was linked to a mixed triple Quadrupole-ESI supply. A SNFIRE (250 mm mm 4.6 mm, 5m) and equal effect LC-ESI-MS/MS were used for chromatographic separation. Separation of individual chemicals. The mobile component was utilised. (A) (B) Below a gradient system, 5nm ammonium acetate in 1.5% methanol; 95 percent B in 0-1 min; 70 percent B in 1-10 min; 40 percent B in 10-14 min; 40 percent B in 14-16 min; 20 percent B in 24-32 min; 95 percent B in 35-forty min. Because of the high cost of mobilising and drying nitrogen fueloline at waft rates of 30 and 950 L/h, the capillary voltage of the ESI supply capability was increased to 3.five KV; cone ability was set at 30 V by each experiment.The temperatures at the source and desolation were 125°C and 350°C, respectively. Information from electro spray mass spectra was collected and processed using Mass Lynx V4.1 SCN 714 software in a fine ionisation mode for a mass range of m/z 100 to m/z 1000.

× RESULTS AND DISCUSSION

Three millilitres of organic extract were dissolved in two millilitres of chloroform and allowed to evaporate. After that, 2ml of acid was added and heated for 2 minutes. The inclusion of Terpenoids is indicated by the development of a grey tint.

1. Identification tests:

1.1 Identification test of dry curry leaves in aqueous

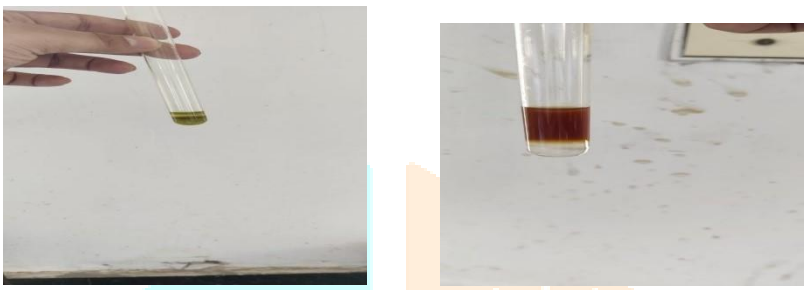


Figure: Identification tests of Terpenoids [aqueous]

Take 1-2 ml of aqueous extract of curry leaves in one test tube and then add 1 ml of conc. H2so4 and 1 ml of chloroform

Result observed that red brownish color is appeared so Terpenoids is present

1.3 Identification test of fresh curry leaves in aqueous

Figure : Identification tests of Terpenoids [aqueous]

Take 1-2 ml of aqueous extract of curry leaves in one test tube and then add 1 ml of conc. H2so4 and 1 ml of chloroform

Result observed that red brownish color is appeared so Terpenoids is present.

1.4 Extraction of fresh curry leaves ın methanol

Take 1-2 ml of methanol extract of curry laves in one test tube and then added 2 ml of chloroform and1mlofconc h2so4 Result show the red brownish color is not appeared so the Terpenoids is absence.

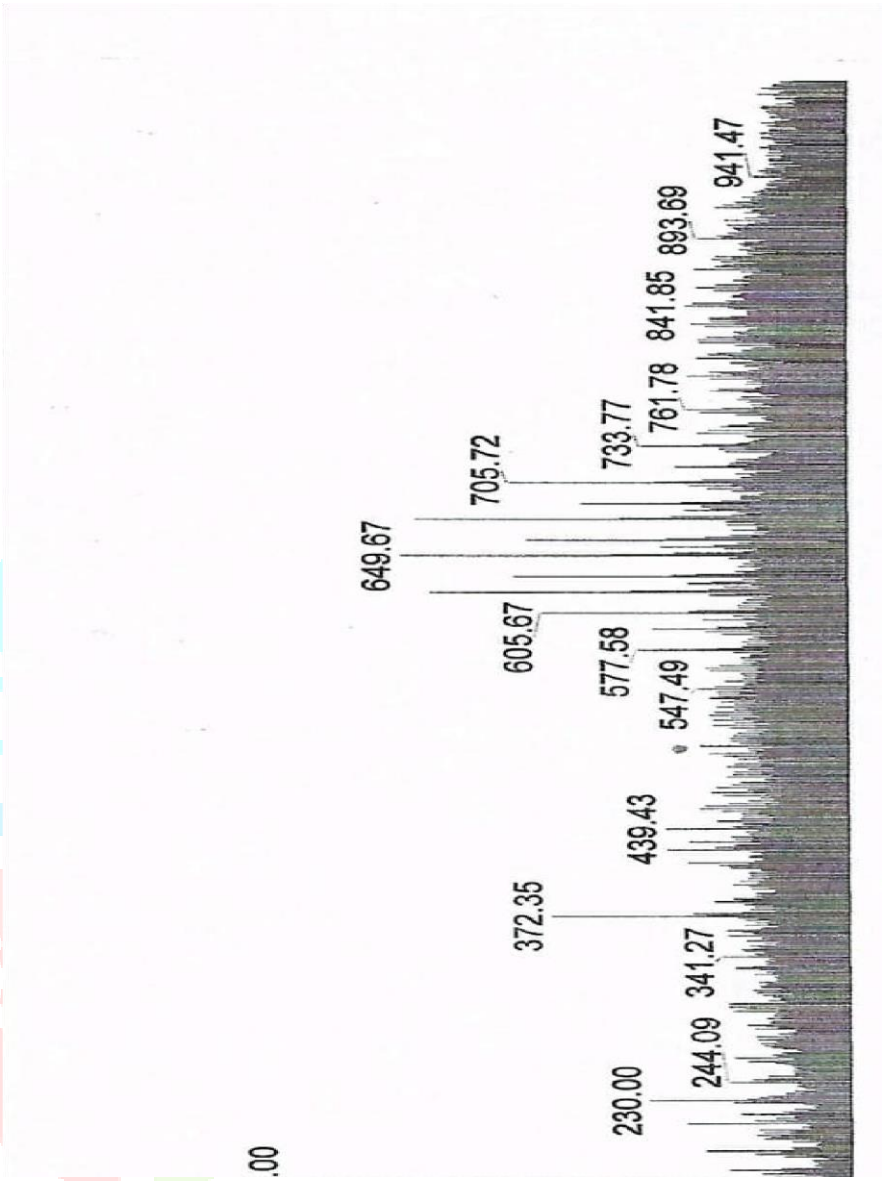
2 Results of Isolation methods

- LCMS (Liquid chromatography- Mass spectroscopy) Types of Terpenoids

Sr No	Name of Terpenoids	Molecular Formula
1	Hemi Terpenoids	C5H8
2	Di Terpenoids	C20H24
3	Tetra Terpenoids	C40H64
4	Poly Terpenoids	C5H8
5	Tri Terpenoids	C30H48

Graph

Figure ÷ LC-MS Graph Figu LC-MS Graph



by

Column chromatography

Figure: column chromatography

Figure: column chromatography solution

Antimicrobial activity

The methanolic extract of rosary pea leaves taken from Waghodia, Vadodara, was examined as part of our ongoing investigation for antibacterial substances. Abrusprecatorius was evaluated for antibacterial activity using an E. coli culture, and it was shown to be effective against the drug penicillin. The inhibitory zone size of E. coli is 18 mm, therefore interpret the result.

Figure9:AntimicrobialActivity

Antifungal activity

Abrusprecatorius tested for antifungal activity with a culture of Candida albicans, it was observed that produce a effective an antibiotic of Fluconazole. Interpreted result of the inhibition zone size of antifungal activity of candida is 10 mm.

CONCLUSION:

Murraya Koenigii was one of the herbs used by our grandparents and grandmothers many centuries ago. The medicinal use is described in this article. Photochemistry. Murraya Koenigii pharmacological characteristics Alkaloids, phenols, Terpenoids, and flavanoids are among the bioactive substances found in Murraya koenigii. Murraya koenigii and its components seem to have considerable pharmacological activity, including as antibacterial, antifungal, and antioxidant properties. In this research, I found Terpenoids and their properties, like antibacterial, antifungal, and antioxidant activity. As a corollary, the value of these beneficial plants should be stressed, and the bioactive components of Murraya koenigii should be investigated further and used against illnesses to which resistance has developed, as well as synergistic investigation.

CONFLICT OF INTEREST

Regarding this inquiry, there are no conflicts of interest for the writers.

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