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A STUDY OF THE EFFECT OF DIFFERENT EXTRACT OF MEDICINAL PLANTS ON HUMAN HEALTH

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ABSTRACT:

In the past thirty years, there has been a significant rise in the number of people using herbal supplements and treatments. The use of herbal medicine as a treatment for a variety of ailments has shown both promising and beneficial possibilities. Herbal and phytoconstituent medicines are gaining popularity all over the world, and an increasing number of individuals are turning to herbal treatments as a means of treating a variety of health conditions. The emergence of antimicrobial resistance as a result of the irresponsible use of antibiotics presents a challenge for human civilization on a scale that has never been seen before. Infections caused by bacteria are notoriously difficult to treat because of the tendency of germs to develop resistance to a diverse array of antimicrobial medications. The potential antibacterial activity of new compounds is being investigated and measured in an effort to find substances with few or no adverse effects. Researchers from all around the world are looking at the wide variety of medicinal plants that are referred to in Unani, Ayurveda, and Siddha. PubMed, Research Gate, Science Direct, and Google Scholar are examples of well-known and widely acclaimed global databases that were searched with a variety of search strings. Indian medicinal plants, multidrug resistance (MDR),

thin layer chromatography (TLC), antimicrobials, and synergism were used in a variety of combinations to reclaim numerous citations associated with this field. As a result, the purpose of this study is to throw some light on the knowledge of medicinal plants as a possible basis for herbal medications and to illustrate how synergism and TLC bioautography play a significant part in the process of discovering antimicrobial chemicals.

Keywords: medicinal, plants, human, health

INTRODUCTION

Since the beginning of time, people from practically every culture have relied on the healing properties of plants to treat a wide variety of ailments. It is possible to trace the widespread use of herbal remedies and healthcare preparations, such as those described in ancient texts like the Vedas and the Bible, and obtained from commonly used traditional herbs and medicinal plants, back to the occurrence of natural products with medicinal properties. This is the case because natural products can be obtained from commonly used traditional herbs and medicinal plants. It has been estimated that more than 35,000 different kinds of plants are now being cultivated for use in medical practises around the globe (Sukumaran & ADS, 2010). Plants, particularly those used in traditional medicine, are rich sources of medicinal compounds that may be put to use in the prevention and treatment of a wide range of illnesses (Bako et al., 2005). The number of species of medicinal plants that are utilised by various countries is outlined which may be found below.

Traditional System of Medicine

Ayurveda is a traditional medical practise that originated in India around 5,000 years ago. It is considered to be one of the world's oldest health care systems. It was practised during the Vedic period of INDIA, according to the ancient literatures on Ayurveda that have been found. During the first millennium B.C., the Charaka Samhita and the Sushruta Samhita each provided a description of approximately seven hundred plants. This medical practise is considered a kind of alternative medicine in a number of different regions of the world where it is commonly used. The Ayurvedic system of India was developed with the goal of preserving, promoting, and maintaining good health as well as avoiding illnesses via the practise of leading a healthy

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lifestyle. Ayurveda translates to "the science of life," which is its literal meaning. In the majority of India's rural and tribal regions, indigenous health traditions involve the utilisation of around 7,500 different plant species. The most common type of treatment provided by a Traditional Medical System is herbal medicine.

Herbal medicine

Using plants for medical and therapeutic purposes, with the goal of healing illnesses and improving human health, is the practise of herbal medicine, also known as phytomedicine. Secondary metabolites found in plants are referred to as phytochemicals (the word phyto comes from the Greek word for plant). These chemicals defend plants against microbial illnesses as well as infestations by many kinds of pests. Phytochemicals are the active components of plants that are thought to have medicinal or therapeutic effects and are thus classified as drugs or medicines. On the basis of their chemical make-up, phytochemicals can be organised into many categories.

It is more probable that pharmacologically active chemicals will be obtained from plants that are used both as food and in traditional medicine. Because of their powerful therapeutic efficacy and antioxidant activities, as well as their lack of side effects and economic feasibility, the medicinal qualities of plants have been the subject of investigation in recent breakthroughs in scientific research all over the world. Plants with medicinal properties are being used to produce medications, which provide people with health care that is both effective and affordable. On the other hand, all plants are capable of producing phytochemicals, which are inherently good for our health despite the fact that the human body is unable to produce them [9]. In addition, plants provide an abundant nutritional supply of biomolecules, vitamins, and minerals, all of which are essential for the body to remain in a healthy state. Numerous studies have shown that the existence of metabolites in plants is responsible for the pharmacological effects that are seen in a variety of plants.

Traditional Uses

The plant has a long history of usage in the treatment of asthma and cough. It is beneficial in the treatment of oedema, dropsy, piles, boils, and other skin eruptions, among other conditions. It is

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pungent, antiphlegmatic, antiperiodic, diuretic, purgative, and laxative. In order to treat pneumonia, a plant that has been crushed is heated in water. In cases of gastrointestinal troubles, an infusion of the root can be used as a gentle astringent. The blooming spikes or the seeds are ground up and mixed with water to create a paste that is then applied topically as a treatment for the bites of dangerous snakes and reptiles. It is also used to treat night blindness and illnesses of the skin. When treating snake bites, the ground root is mixed with water and administered to the victim until the snakebite victim throws up and regains consciousness. It has been proposed that inhaling the fume produced by mixing the roots of Smilax ovalifolia and Achyranthes aspera together will stimulate appetite and treat a variety of different stomach conditions. It is effective in treating haemorrhoids, and both the leaves and the seeds are emetic, hydrophobic, carminative, and digestive. Additionally, it can reduce swelling and release phlegm.

INDIAN SYSTEM OF MEDICINE

Ayurveda, which translates to "science of life," is often regarded as the world's most comprehensive and oldest medical system. Its origins may be traced all the way back to 5000 B.C. There is no way to refute the claims that a number of people in India and elsewhere across the world have attested to the efficacy of Ayurvedic remedies. Panchamahabhutha, also known as the "five fundamental components of nature," Tridosha, sometimes known as the "three humours," and Prakrithi are the underlying principles of Ayurveda. The diagnostic and treatment processes that are employed are unique and are still applicable today (individual constitution)

There is a significant body of literature pertaining to Ayurveda that has been written in Sanskrit as well as a number of other Indian languages. This literature covers a variety of topics pertaining to illnesses, treatments, and pharmacy (Dev 1999). The Vedas and other manuscripts known as the Samhitas are the primary sources of Ayurveda. These Samhitas are medical treatises that detail various medical treatments, such as surgery and a style of massage that focuses on important energy points. The Rig Veda and the Atharva Veda, which date back to the second millennium before the common era, include the oldest references to the plants that fit this description. The Charaka Samhita, which was written about 900 B.C., was the first recorded treatise to completely commit itself to the ideas and practises of Ayurveda; the major focus of this work was therapeutics. This literature outlines all of the primary tenets of Ayurveda,

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although it focuses the most of its attention on digestion (described as internal fire, or agni). The Susruta Samhita is another early text that is considered to be a classic. It mostly concentrates on surgical procedures.

THE RECENT DEVELOPMENT OF NATURAL DRUGS

Only 94 plant species have been responsible for the production of any of the 122 biologically active chemicals that have been discovered so far. There are around 2,50,000 different blooming plant species on this planet, according to the most conservative estimate. Only around 6% of them have been tested for biological activity, and only approximately 15% have reportedly been investigated for their phytochemical properties. In order to identify whether or not these plants contain a significant quantity of therapeutic extracts, consistent research should be carried out.

It has been well recognised that traditional medicine and the usage of medicinal plants are utilised in the majority of developing nations as a normative foundation for the preservation of good health. In addition, an increasing reliance on the use of medicinal plants in industrialised societies can be traced back to the extraction and development of several drugs and chemotherapeutics from these plants as well as from traditionally used rural herbal remedies.

STANDARDIZATION OF PHYTOMEDICINE

Herbs are natural products, and their chemical composition can vary depending on a number of factors, including botanical species, used chemotypes, the anatomical part of the plant that is used (seed, flower, root, leaf, fruit rind, etc.), as well as storage, sun, humidity, type of ground, time of harvest, geographic area, and so on. Herbs come in a wide variety of flavours and aromas, and they are used in a wide variety of culinary and medicinal applications This variability can lead to large changes in the pharmacological action of the drug, which can include problems with both pharmacokinetics and pharmacodynamics. Because there is a significant potential for difference between various batches of medication, it is of the utmost importance that a system of standardisation be put in place for every plant medicine that is now available on the market. Herbal remedies are not the same thing at all as synthetic pharmaceuticals in any sense of the word.

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OBJECTIVE OF THE STUDY

1. To study on Indian System Of Medicine and its uses.

2. To study on the effect of different extract of medicinal plants on human health

REVIEW LITRETURE

Singh 2017,One definition of the scientific field known as "herbal medicine" describes it as "the practise of treating disease with preparations derived from plants." It is also sometimes referred to as phytomedicine or botanical medicine. In recent years, the term "phytotherapy" has emerged as a more precise synonym for "herbal medicine" or "botanical medicine." Herbal medicine was the primary form of treatment during the beginning of the twentieth century because antibiotics and analgesics had not yet been found. Herbal therapy progressively lost its appeal among patients after the introduction of the allopathic system of medicine, which is based on the rapid therapeutic activities of synthetic pharmaceuticals.

Krishna Raju et al. 2015,The significance of medicinal plants and traditional health systems in the process of resolving the challenges faced by the global health care industry is attracting an increasing amount of attention. As a result of this renewed interest, research on plants with significant therapeutic applications is skyrocketing at the global level. Unfortunately, this trend is frequently having a negative impact on natural environments and maternal populations in the nations from which these plants originated. The majority of emerging nations have incorporated traditional medical practise into their culture as an essential component of their identity. Throughout the course of human history, every therapeutic preparation has been obtained from plants, whether these plants were used in their most basic form as raw plant materials or in their most refined form as crude extracts, mixes, etc ().

Padma 2015,the quick speed of research and growth in the field of herbal medicine, it has become an interdisciplinary discipline. Ayurveda, botany, pharmacognosy and phytochemistry, biochemistry, ethnopharmacology, and toxicology are all examples of alternative and complementary systems of medicine. If a scientific monograph of a medicinal plant is viewed, one can draw the conclusion that knowledge of these fields is an integral part of the practise of

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herbal medicine. Recent years have seen an extraordinary period of expansion for the natural medication sector. An examination of the data reveals that an increasing number of individuals are seeking the advice of practitioners of herbal medicine. The World Health Organization (WHO) is another organisation that recognises the significance of herbal medicines. A research conducted in the United States found that between 60 and 70 percent of patients living in rural regions rely on herbal medication to treat their day-to-day illnesses. Several writers have, either in experiments conducted on animals or on humans, commented favourably on herbal medications, most of which were in the form of extracts.

Kong et al. 2013,It was not until the 19th century that man began to isolate the active principles of medicinal plants, and it was the French scientists Caventou and Pelletier who made the seminal discovery of quinine coming from Cinchona bark. Natural products play an important role in the field of research and development for new drugs; however, it was not until the 19th century that man began to isolate the active principles of medicinal plants. A variety of natural compounds that were extracted from higher plants and developed as therapeutic treatments prior to World War II are still in use today. This includes a few of the natural products.

MATERIALS AND METHODS

HiMedia in India, Merck in Germany, and Sigma-Aldrich in the United States provided the research team with the chemicals, reagents, and culture medium that were utilised in the investigation (Appendix 1).The plants that constitute the subject of this study were gathered from a variety of locations around Sikkim. It was decided to prepare the herbariums using the plant specimens. The plant specimens were examined by the Taxonomist in the Taxonomy and Environmental Biology Laboratory within the Department of Botany at the University of North Bengal in Siliguri, India, in order to determine their identities and verify their authenticity. Copies of the voucher specimens were placed at the herbarium of the University of North Bengal as well as in the Department of Microbiology at Sikkim University, which is located in Sikkim, India.

DATA ANALYSIS

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provides information on the identified plants, as well as the location of the collection and the accession numbers of the voucher specimens. Table 4.2 presents the plant components that were analysed as part of the research project.

Table 4. 1 Identification of the plants used for the study

Sl. No.	Plants identified	Common name	Family	Accession number	Site of Collection
1	Aconogonum molle (D.Don) Hara	'Thotne'	Polygonaceae	09735	Gangtok
2	Laportea terminalis Wight	'Patley sisnu'	Urticaceae	09737	Lal market, East Sikkim
3	Phlogacanthus thyrsiformis (Roxb.ex Hardw.) Mabb.	'Titay'	Acanthaceae	09733	Lal market, East Sikkim
4	Rhus chinensis.Mill.	'Bhakiamilo	Anacardiaceae	09736	Amba, East Sikkim
5	Tectaria macrodonta C.Chr.	'Kali ninguree	Dryopteridaceae	09738	Pademchey, East Sikkim
6	Tupistra nutans Wallich	'Nakima'	Convallariaceae	09740	Bermoik, West Sikkim
7	Zanthoxylum armatumDC.	'Bokay timbur'	Rutaceae	09741	Amba, East Sikkim.

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Table 4. 2 Parts of the plants used for the study

Name of the plant	Part of the plant used
Aconogonum molle (D.Don) Hara	Leaves
Laportea terminalis Wight	Leaves
Phlogacanthus thyrsiformis (Roxb.ex Hardw.) Mabb.	Leaves and flowers
Rhus chinensis Mill.	Fruits
Tectaria macrodonta C.Chr.	Roots
Tupistra nutans Wallich	Inflorescence
Zanthoxylum armatum DC.	Fruits

QUALITATIVEPHYTOCHEMICAL ANALYSIS

In the current investigation, it was discovered that the solvent extracts of the plants that were being investigated included a variety of phytochemicals. These phytochemicals included alkaloids, flavonoids, steroids, and saponins.

Phytochemical study of extracts of Aconogonum molle (D. Don) Hara in three different solvents: methanol, ethyl acetate, and water

The phytochemical examination of the extracts of Aconogonum molle (D.Don) Hararevealed the presence of anthocyanin, alkaloid, lipids and oil, and carbohydrate in all of the extracts. The analysis was performed on aqueous, ethyl acetate, and methanol extracts of the plant. Tannin was found in both the methanol and the aqueous extracts, whereas flavonoid, glycoside, and saponin were only found in the aqueous extract. The extract of ethyl acetate did not contain any phenol. When compared to the extracts made using methanol and ethyl acetate, the majority of the phytochemicals were discovered in the aqueous medium. The results are shown in Table 4.3.

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Table 4. 3 Phytochemical analysis of aqueous, ethyl acetate and methanol extracts of Aconogonum molle (D. Don) Hara

Test for Phytochemicals	Aqueous extract	Ethyl acetate extract	Methanol extract
Anthocyanin	+	+	+
Alkaloid	+	+	+
Carbohydrate	+	+	+
Fats and oil	+	+	+
Flavonoid	+	-	-
Glycosides	+	-	-
Phenol	+	-	+
Protein	-	+	-
Saponin	+	-	-
Tannin	+	-	+

'+' indicates present; '-'indicates absent

Phytochemical analysis of aqueous, ethyl acetate and methanol extracts of Laportea terminalis Wight

The phytochemical analysis of extracts of Laportea terminalis Wight made with methanol, ethyl acetate, and water showed the presence of anthocyanin, alkaloid, flavonoid, glycosides, and phenol. Tannin, carbohydrates, and saponin were only found in the extracts made using methanol and water. Only the methanol extract had any trace of protein. Only the aqueous extract contained traces of the oils and fats. The results are shown in Table 4.4.

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Table 4. 4.Phytochemical analysis of aqueous, ethyl acetate and methanol extracts of Laportea terminalis Wight

Test for Phytochemicals	Aqueous Extract	Ethyl acetate extract	Methanol extract
Anthocyanin	+	+	+
Alkaloid	+	+	+
Carbohydrate	+	-	+
Fats and oil	+	-	-
Flavonoid	+	+	+
Glycosides	+	+	+
Phenol	+	+	+
Protein	-	-	+
Saponin	+	-	+
annin	+	-	+

Phytochemical study of extracts of Phlogacanthus thyrsiformis in three different solvents: methanol, ethyl acetate, and water (Roxb.ex Hardw.) Mabb.

The phytochemical examination of the extracts of Phlogacanthus thyrsiformis (Roxb.ex Hardw.) Mabb. found the presence of anthocyanin, alkaloid, carbohydrate, flavonoid, glycosides, phenol, and saponin. The analysis was performed on the aqueous, ethyl acetate, and methanol extracts. Tannin did not show up in any of the solvent extracts that were taken from the test plant. Both

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the ethyl acetate extract and the aqueous extract did not contain any protein.. The results are shown in Table 4.5.

Table 4. 5. Phytochemical analysis of aqueous, ethyl acetate and methanol extracts of Phlogacanthus thyrsiformis (Roxb.ex Hardw.)

Test for Phytochemicals	Aqueous Extract	Ethyl acetate extract	Methanol extract
Anthocyanin	+	+	+
Alkaloid	+	+	+
Carbohydrate	+	+	+
Fats and oil	+	+	+
Flavonoid	+	+	+
Glycosides	+	+	+
Phenol	+	+	+
Protein	-	-	+
Saponin	+	+	+
Tannin	-	-	-

'+' indicates present; '-'indicates absent

Phytochemical analysis of aqueous, ethyl acetate and methanol extracts of

Rhus chinensis Mill.

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The phytochemical analysis of the aqueous, ethyl acetate and methanol extracts of Rhus chinensis Mill. revealed the presence of anthocyanin, alkaloid, flavonoid, glycoside, phenol and tannin. Saponin was absent in all the solvent extracts of the test plant. Carbohydrate was absent in ethyl acetate extract. Protein was detected only in ethyl acetate extract. Fats and oil were present only in aqueous extract. The results are shown in Table 4.6.

Table 4. 6 Phytochemical analysis of aqueous, ethyl acetate and methanol extracts of Rhus chinensis Mill.

Test for Phytochemicals	Aqueous extract	Ethyl acetate extract	Methanol extract
Anthocyanin	+	+	+
Alkaloid	+	+	+
Carbohydrate	+	-	+
Fats and oil	+	-	-
Flavonoid	+	+	+
Glycosides	+	+	+
Phenol	+	+	+
Protein	-	+	-
Saponin	-	-	-
Tannin	+	+	+

+' indicates present; '-'indicates absent

Phytochemical study of Tectaria macrodontaC.Chr. extracts in three different solvents: methanol, ethyl acetate, and water. In the aqueous, ethyl acetate, and methanol extracts of Tectaria

macrodontaC.Chr., the presence of anthocyanin, carbohydrate, flavonoid, tannin, glycosides, and phenol was discovered using phytochemical analysis. In none of the solvent extracts made from the test plant were there any traces of alkaloid, lipids, or oil. Only the ethyl acetate extract showed evidence of the presence of protein. Both the methanolic and the aqueous extracts contained some amount of saponin. The results are shown in Table 4.7

Table 4. 7 Phytochemical analysis of aqueous, ethyl acetate and methanol extracts of Tectaria macrodonta C.Chr.

Test for Phytochemicals	Aqueous extract	Ethyl acetate extract	Methanol extract
Anthocyanin	+	+	+
Alkaloid	-	-	-
Carbohydrate	+	+	+
Flavonoid	+	+	+
Fats and oil	-	-	-
Glycoside	+	+	+
Phenol	+	+	+
Protein	-	+	-
Saponin	+	-	+
Tannin	+	+	+

'+' indicates present; '-'indicates absent

Phytochemical study of extracts of Tupistra nutans Wallich taken in three different solvents: methanol, ethyl acetate, and water

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Anthocyanin, alkaloids, flavonoids, glycosides, and tannin were found in the Tupistra nutans Wallich aqueous, ethyl acetate, and methanol extracts, according to the phytochemical examination. In none of the extracts of the plant under investigation was phenol, fat, or oil present. Only the ethyl acetate extract of Tupistra nutans Wallich had protein, while the ethyl acetate extract of Tupistra nutans Wallich did not contain any saponin.

ANTIBACTERIAL ACTIVITY

The antibacterial activity of the aqueous, ethyl acetate, and methanol extracts of the test plants was evaluated by measuring the diameter of the zone of inhibition of growth of eleven test bacteria. These eleven bacteria are as follows: Enterobacter aerogenes, Escherichia coli, Klebsiella pneumoniaesubsp. pneumoniae, Proteus mirabilis, Shigella flexneri, Salmonella enterica typhimurium, Salmonella.

Antibacterial activity of aqueous, ethyl acetate and methanol extracts of Aconogonum molle (D.Don) Hara

At a dosage of 400 mg/mL, the aqueous extract was able to suppress the development of just two of the test microorganisms. These bacteria were Vibrio cholerae (classical O1) and Staphylococcus aureus.

The growth of all of the test microorganisms was suppressed by the ethyl acetate extract when it was diluted to a concentration of 400 mg/mL, with the exception of Salmonella enterica typhimurium. The diameter of the zone of inhibition exhibited by the ethyl acetate extract against Escherichia coli was the largest among the Gram-negative bacteria (22 mm), and the diameter of the zone of inhibition exhibited by the ethyl acetate extract against Bacillus cereus was the largest among the Gram-positive bacteria (17.7 mm).

At a concentration of 100 mg/mL, the methanol extract of Aconogonum molle (D.Don) Hara did not have an inhibitory effect on the growth of any of the test microorganisms. At a dosage of 400 mg/mL, the methanol extract demonstrated the greatest width of zone of inhibition against Vibrio cholerae (O139) (160.57 mm) and Staphylococcus aureus (17.30.5 mm) among the Gram negative bacteria and Gram positive bacteria, respectively.

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- The ethyl acetate extract of Aconogonum molle (D.Don) Hara demonstrated possibly stronger antibacterial activity than the aqueous and methanol extracts of the plant.
- An increase in the concentration of the plant extracts was shown to be associated with a statistically significant expansion in the average diameter of the zone of inhibition.
- Extracts of Laportea terminalis from water, ethyl acetate, and methanol were tested for their ability to inhibit bacterial growth.
- At the amounts of extract that were investigated, the aqueous extract of Laportea terminalis Wight did not prevent the development of any of the bacteria that were being tested.

The ethyl acetate extract of Laportea terminalis Wight inhibited the growth of all of the test bacteria at a higher concentration of 400 mg/mL. The largest diameter of zone of inhibition was observed against Shigella flexneri (231.7 mm) among the Gram negative bacteria, and it was observed against Staphylococcus aureus (23.70.57 mm) among the Gram positive bacteria.

CONCLUSION

Tinospora cordifolia is a multipurpose resource for all different kinds of life since it plays such a varied range of roles. There are reports, which were previously addressed, that the plant extracts include active chemicals in the form of alkaloids, glycosides, lactones, and steroids. These substances were found in the plant extracts. All of these active chemicals have immunomodulatory and physiological activities, yet they all differ from one another, which demonstrates the plant's wide adaptability. There is a pressing need for more research into the ways in which active chemicals really interact with biological systems and how these interactions alter structure-function connections. Crystal structures of membrane-bound receptors, the activation of downstream signalling cascades, and changes in the immediate surroundings of the site of action are all things that have the potential to lead us to the discovery of new vantage points on how nature works. The investigation into the vibrant origins of nature can also direct our attention to the many interactions that occur between groups of creatures that share a common evolutionary ancestor.

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