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Role of Medicinal Plants in Human Health and Traditional Medicine

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Abstract

Medicinal plants have played an important role in human health and traditional medicine since ancient times. Before the development of modern medical science, people depended on plants, herbs, roots, leaves, flowers, seeds and bark for the prevention and treatment of various diseases. Medicinal plants contain useful natural compounds such as alkaloids, flavonoids, tannins, essential oils, vitamins and antioxidants, which help in improving immunity, reducing inflammation, supporting digestion and maintaining general health. Plants such as Tulsi, Neem, Turmeric, Aloe vera, Amla, Ashwagandha, Giloy, Ginger and Garlic are widely used in traditional health practices for common problems like cough, cold, fever, wounds, skin infections, weakness and digestive disorders. Traditional medicine systems such as Ayurveda, Unani, Siddha, folk medicine and tribal medicine have preserved valuable plant-based knowledge for generations. Medicinal plants are especially important in rural and tribal areas where modern health facilities may not always be easily available. In modern times, medicinal plants are also used in pharmaceutical industries, herbal products, cosmetics, nutraceuticals and immunity-boosting formulations. However, challenges such as lack of scientific validation, adulteration, quality control problems, overexploitation and lack of dosage awareness need attention. Therefore, medicinal plants are valuable for preventive health care, primary health care and sustainable health practices, but their safe use requires scientific research, proper standardization and conservation.

Keywords

Medicinal Plants, Human Health, Traditional Medicine, Ayurveda, Herbal Remedies, Disease Prevention, Immunity, Primary Health Care, Folk Medicine, Sustainable Health Practices

Introduction

Since ancient times medicinal plants have been playing an important role in human health and traditional medicine. In earlier times when medical science had yet to be developed, the human kind relied primarily on plants, herbs, roots, leaves, flowers, seeds, etc., bark and natural substances for the treatment of diseases and preservation of health. These plants were used to cure fever, cough, cold, wounds, digestive problems, skin diseases, pain, infections and many other health problems. Many medicinal plants are still used today in many areas of the world due to their cultural acceptance, naturalness and accessibility. There are strong ties between medicinal plants and human health. Plants have numerous beneficial natural compounds like alkaloids, flavonoids, tannins, essential oils, vitamins and antioxidants. These compounds help



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the human body in fighting diseases, improving immunity, reducing inflammation and maintaining general health. For instance, Tulsi is used for immunity and respiratory issues, Neem is effective against diseases, for skin healing Turmeric is used, Aloe Vera is helpful for wounds, digestion and Amla has a lot of Vitamin C. From the foregoing examples, it is clear that medicinal plants have some health values apart from their traditional knowledge. Traditional medicine is a key health care system that relies on knowledge, beliefs and practices that have been handed down by various communities over time.

Medicinal plants have been used as a primary source of treatment in the system of medicine like Ayurveda, Unani, Siddha, Homeopathy, folk medicine, tribal medicine etc. In India the role of herbs and plants in Ayurveda is very special in maintaining balance in the body and preventing diseases. Likewise, indigenous and tribal people have maintained knowledge on medicinal plants of the area through oral tradition and practice. In rural areas, where the availability of modern health care services is not always assured, medicinal plants are of particular importance. In these regions, individuals rely on their self-made remedies and herbal remedies for basic healthcare. Traditional healers, older family members and local communities are important in identifying medicinal plants and utilizing these plants to treat various ailments. This traditional knowledge is very valuable and related to health care and nature, culture and community experience.

Medicinal plants have played a vital role in the modern world not just in traditional medicine but also in pharmaceutical industries. Plant compounds are used to develop many modern medicines. Herbal products, natural supplements and cosmetics and medicine for enhancing immunity have gained popularity throughout the world. This indicates a high potential for medicinal plants in traditional & modern health care system. But scientific research, correct dosage, control and precautions regarding medicinal plants for effective and safe utilization are also required. So, the research on Medicinal Plants in Human Health and Traditional medicine is of great importance. It teaches us the importance of value of natural resources in preventing disease, healing and in good health. It also emphasizes the need for the conservation of medicinal plant biodiversity and protection of traditional knowledge. Medicinal plants are not only medicine, but they're also a connection between nature, culture and health care.

Medicinal Plants and Human Health

Medicinal plants have a close relationship with human health because they contain natural compounds that support the body in preventing diseases, treating common health problems and maintaining overall well-being. Since ancient times, people have used different parts of plants such as leaves, roots, flowers, seeds, bark and fruits for healing purposes. These plants are an important part of traditional medicine because they are natural, easily available and culturally accepted in many societies. Medicinal plants are not only used to cure diseases but also to maintain balance in the body, improve immunity and support a healthy lifestyle.



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- **Role in Disease Prevention**

Medicines are used extensively as a preventive measure against diseases. Disease prevention involves giving the body protection from disease BEFORE it gets bad. A number of medicinal plants are rich with antioxidants, vitamins, minerals, antibacterial and anti-inflammatory properties that can help the body combat harmful microorganisms and minimize the risk of infection. Amla, for instance, contains large amounts of vitamin C and is considered to be a potent immunity booster. Turmeric is rich in curcumin, which has anti-inflammatory effects. Tulsi is used in respiratory health and Neem is used for antibacterial and skin protection properties. Medicinal plants are also beneficial for keeping the body healthy in general. Some plants aid in the digestion, purifying the blood, decreasing oxidative stress and boosting the body's natural defenses. Many medicinal plants are utilized day by day in traditional medicine in the form of medicines, herbal tea, herbal decoctions, and home remedies to safeguard the body from seasonal ailments like cough, cold, fever and weakness. Therefore, medicinal plants are not only beneficial once disease strikes but also in strengthening the body's immunity to disease. Nevertheless, the preventive effect of medicinal plants is subject to the correct use, identification and dosage. They should not be viewed as a replacement for medical treatment, particularly for serious illnesses. Their value is more if they are applied in balanced lifestyle, appropriate diet and healthy habits.

- **Use in Treatment of Common Diseases**

For centuries medicinal plants have been used in common diseases treatments. Herbs, and plant based remedies are used in traditional medicine to treat cough, cold, fever, indigestion, acidity, constipation, wounds, skin infections, headache, joint pain and weakness. For instance, Tulsi and Ginger are used in cough and cold. The leaves of aloe vera are used in medicine for healing wounds and for digestive issues. Neem is used for skin diseases and infections. Turmeric is used for wounds, swelling and pain. Amla is used as an immunity and strengthener. Medicinal plants have various uses in different traditional systems like Ayurveda, Unani, Siddha, folk medicine and tribal medicine. These plants can be used as juice, powder, paste, oil, herbal tea or as tablets. Medicinal plants play an important role as a first line of treatment in rural and tribal communities as medical help may not always be readily available. The know-how about local plants and their medicinal properties is generally held by the traditional healers and old people. The importance of the treatment value of the medicinal plants is that many cases of daily health problems can be overcome with the help of medicinal plants. They tend to be inexpensive and readily accessible in their local area. But proper usage is crucial. Side effects may occur in some plants due to excessive intake or when used without knowledge. Thus, medicinal plants must be used with care and serious illnesses should be taken under a medical supervision.



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- **Immunity-Boosting Properties**

Medicinal plants are also important as many of them can help in boosting immunity. Immunity is a natural resistance of the body to diseases, infections and harmful microorganisms. Having a strong immune system gives the body a chance to fight off the colds and recover faster. There are medicinal plants that are rich in vitamins, antioxidants, and bioactive substances that can benefit the immune system and enhance the body's defenses. Tulsi, Amla, Giloy, Turmeric, Ginger and Ashwagandha are medicinal herbs that have been traditionally used to boost immunity. Tulsi is used to strengthen respiratory health, and to protect the body from cough and cold. Amla is high in vitamin C that strengthens the immune system. Traditionally, Giloy is used to enhance the resistance in the body and decrease weakness. Turmeric is used to soothe inflammation and to heal. Ginger is beneficial for digestion, colds and throat issues. Ashwagandha is used in the treatment of stress and strengthening of physical strength thereby indirectly strengthening immunity. In preventive health care, medicinal plants play a crucial part in boosting immunity. During the changing seasons, herbal drinks, kadha, herbal tea and herbs are used in many homes to keep the body safe from infections. These plants are included in this group to assist in promoting balance, tonicity and overall well-being. Immunity, however, can't be enhanced with medicinal plants. Also, proper nutrition, sleep, exercise, hygiene and medical care are needed. Medicinal plants are the allies of immunity, but their use must be done safely and wisely.

- **Important Medicinal Plants and Their Uses**

Medicinal plants are an important part of human health care and traditional medicine. They are rich in natural bioactive compounds like alkaloids, flavonoids, tannins, phenols, essential oils, vitamins and antioxidants which can be beneficial for health maintenance, reducing inflammation, resisting infections and supporting natural healing. The traditional medicinal uses of plants include leaves, roots, bark, seeds, fruits, flowers, oil, paste, powder, juice, decoction and herbal tea. Traditional medicine is defined by WHO as the "knowledge, skills and practices that have been passed down from generation to generation within a cultural and historical context, using natural or herbal remedies to promote health and achieve well-being. In countries such as India where medicinal plants have been used for centuries in Ayurveda, Unani, Siddha, folk medicine and tribal medicine, medicinal plants are of special importance. These plants are very popular for cough, cold, fever, wounds, skin, digestion, weakness, pain, stress and immunity support. They have also been found to be important in rural and tribal populations where locally available plants may be the primary source of health care. Research on medicinal plants also reveals their significance in disease prevention and primary health care and their correct identification, proper dosage and safe use are very essential.

- **Tulsi**

Holy Basil (Tulsi) is one of the most renowned medicinal plants used in traditional Indian medicine. It is generally employed for cough, cold, throat irritation, respiratory issues and



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seasonal infections. Tulsi leaves are used for herbal tea, kadha and home remedies. It was traditionally believed to be beneficial in building the body and making breathing more comfortable as well as improving overall health. The research reviews indicate that Tulsi has anti-oxidant, anti-microbial, anti-inflammatory, and stress-protective properties; however, its usage should be regarded as complementary and not as treatment.

Image 1: Tulsi



- **Neem**

Another plant that is highly beneficial for medicinal purposes is Neem. It is traditionally used for its leaves, bark, seeds and oil. Neem is particularly renowned for its skin applications as it has traditionally been used to treat acne, itching, wounds, skin infections and other skin issues. The leaves of the Neem tree are also used in bath water and herbal formulas due to their cleansing effect. According to scientific reviews, neem has numerous active compounds and the antimicrobial and anti-inflammatory properties. But, neem oil or neem preparations should not be used indiscriminately, particularly in the internal system as overdose or unsafe use of neem oil can have harmful effect.

Image 2: Neem





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- **Turmeric**

Turmeric is a medicinal plant that's commonly used as a spice. It contains curcumin, which has anti-inflammatory and antioxidant effects. In traditional medicine, turmeric is used for skin care, digestion, immunity support, wound, swelling and joint pain. A traditional method in India is to use turmeric with milk or food. Recent studies also comment on the use of curcumin for its potential in the treatment of oxidative and inflammatory diseases, but curcumin is poorly absorbed and high doses of curcumin may not be recommended for all individuals. According to NCCIH, it is likely safe to use turmeric or curcumin in recommended doses over short periods of time, but there may be some caution for supplement users.

Image 3: Turmeric



- **Aloe Vera**

Aloe vera is one of the most important medicinal plants, primarily used for its skin-healing and cooling properties. In ancient times Aloe Vera gel is used to treat burns, wounds, dryness, irritation and minor skin issues. It is additionally utilized in cosmetics, skin care products and hair-care items that are herbal based. Aloe vera is also used orally for digestion, but caution should be taken. According to NCCIH, topical aloe gel is generally safe to use, but some people may get a rash or eczema, itchiness, and burning; oral aloe latex can be responsible for abdominal cramps, diarrhea and pain. So, Aloe vera is beneficial, but its safe form and usage is very important.



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Image 4: Aloe Vera



- **Amla**

Amla is a very nutritious medicinal fruit, Indian gooseberry. It is loaded with vitamin C and other anti-oxidants that help in immunity, digestion, skin health and overall strength. In the traditional medicine system, Amla is utilized as a recent, powder, juice, chyawanprash and natural medicine blends. Used frequently for weakness, also for digestion, health and strengthening of the body for hair and skin care. According to a review on Amla it is a fruit of nutritive and nutraceutical significance that contains bioactive molecules.

Image 5: Amla





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- **Ashwagandha**

Ashwagandha is a very significant medicinal plant in Ayurvedic medicine. It is primarily used as an adaptogenic herb, which is a herb traditionally used to regulate the body's reaction to stress, weakness, fatigue and lack of strength. It is also used to enhance sleep, vitality and energy. Ashwagandha can be consumed as a powder, capsule or tonic. It should be used with caution, though. NCCIH states that Ashwagandha may be safe for short-term use, but some people may experience drowsiness, stomach upset, diarrhea or vomiting and it should be avoided during pregnancy and breastfeeding.

Image 6: Ashwagandha



- **Giloy**

Giloy also known as Guduchi is considered as a traditional medicinal plant in Ayurveda for fever and weakness, inflammation and immunity support. It is usually used in form of juice, decoction or tablet. In traditional usage, Giloy is thought to be useful during the change of seasons as it is believed to boost body resistance. *Tinospora cordifolia* has been recently reviewed as an antioxidant and anti-inflammatory medicinal plant; however use of it should be cautious because the quality, purity and dosage of herbal medicine can be variable. It should not be used in excess or in any manner without guidance, particularly from people who have liver issues or who are taking regular drugs. Overall, it is clear that there is a strong connection between nature and human health, as important medicinal plants like Tulsi, Neem, Turmeric, Aloe vera, Amla, Ashwagandha and Giloy demonstrate. Such plants are beneficial due to their low cost and widespread availability as well as their cultural acceptance. They promote preventive health care, traditional healing and daily health. Medicinal plants, on the other hand, should not be used in a reckless manner. Correct dosage, scientific validation, quality control and medical guidance are required particularly in serious diseases, pregnancy, children, elderly



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and patients already on medication. Hence, medicinal plants serve as a link between traditional knowledge and health care.

Image 7: Giloy



Table 1: Important Medicinal Plants and Their Therapeutic Uses

S. No.	Medicinal Plant	Commonly Used Part	Major Therapeutic Uses
1	Tulsi / Holy Basil	Leaves	Used for cough, cold, throat irritation, respiratory support, stress relief and general immunity support. Tulsi has been studied for antimicrobial, antioxidant and anti-inflammatory properties.
2	Neem	Leaves, bark, seeds, oil	Used for skin problems, acne, itching, wounds, oral hygiene and infection-related conditions. Neem is known for antimicrobial and anti-inflammatory potential.
3	Turmeric	Rhizome	Used for swelling, wounds, joint pain, digestion, skin care and immunity support. Its active compound curcumin is associated with antioxidant and anti-inflammatory effects.
4	Aloe Vera	Leaf gel	Used for minor burns, wounds, skin dryness, irritation, hair care and digestive support. Topical aloe gel is commonly used for skin healing.



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5	Amla / Indian Gooseberry	Fruit	Used for immunity, digestion, weakness, skin health, hair health and antioxidant support. Amla is rich in vitamin C and other antioxidant compounds.
6	Ashwagandha	Root	Used for stress, fatigue, weakness, sleep support, physical strength and general vitality. It is traditionally used as an adaptogenic herb.
7	Giloy / Guduchi	Stem	Used for fever, weakness, inflammation and immunity support. It is traditionally valued for antioxidant and anti-inflammatory effects.
8	Ginger	Rhizome	Used for cough, cold, sore throat, nausea, indigestion, acidity and body warmth during seasonal illness.
9	Garlic	Bulb	Used for heart health support, digestion, infection resistance and general wellness. It is traditionally valued for antimicrobial properties.
10	Mint / Pudina	Leaves	Used for indigestion, gas, acidity, nausea, headache and cooling effect. It is commonly used in herbal drinks and home remedies.

Traditional Medicine Systems

Traditional medicine systems are health-care practices that have been established over a long period of human experience, built upon cultural values, observation of nature and the knowledge of the community. Such systems are not new and can be found in many societies, both for the prevention of disease and for treatment and general well-being. According to the World Health Organization, traditional medicine is codified or non-codified health systems with knowledge, skills, practices and philosophies from various historical and cultural backgrounds; it also draws attention to the importance of the balance of body, mind and environment and emphasizes nature-based remedies. The use of medicinal plants has largely formed the basis of many traditional medicine systems due to the fact that plants are readily available, culturally accepted, and naturally endowed with compounds of use. Leaves, roots, bark, seeds, flowers, fruits, oils and plant extracts are used in different ways for healing. The health is not only the absence of disease in these systems, but health is also a focus on



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prevention, balance, diet, lifestyle, natural remedies, and harmony with the environment. Medicinal plants are closely associated to Ayurveda in India, folk medicine and tribal healing.

Ayurveda and Medicinal Plants

Ayurveda is one of the most vital traditional medicine system of India. It is founded on the concept of balance in body, mind and lifestyle in order to achieve health. The medicinal plants are integral part of Ayurveda and in Ayurveda the herbs are used for prevention, treatment, purification, rejuvenation and strengthening of the body. In Ayurvedic medicine, plants are not only prescribed to heal disease once it has been diagnosed, they are also used to boost health, enhance digestion, strengthen the immune system, decrease stress and promote overall well-being throughout the day. Medicinal plants are used in various forms in Ayurveda viz powder, herbal formulations, tablets, juice, paste, oil and decoction. For instance, Tulsi has many applications in cough, cold and respiratory care; Amla for Vitamin C, digestion and immunity; Ashwagandha for strength, stress and vitality; Neem for skin problem and infection; Turmeric for body swelling, wounds and inflammation and Giloy is traditionally used for fever and body resistance. These plants are chosen due to their characteristics, flavor, effect on the body and appropriateness for the patient. In Ayurveda, medicinal plants are also related to diet and lifestyle. Numerous herbal remedies, herbal drinks and even food items require the use of many herbs. This way, Ayurveda is a preventive and holistic approach to medicine. The Ministry of Ayush is set up to promote and support the traditional health care system of India including the Ayurveda system and the National Medicinal Plants Board looks after matters pertaining to medicinal plants, conservation, cultivation, trade and export. But Ayurveda should be learned with the old values and scientific measures. Medicinal plants can be beneficial if properly identified, dosed, and used, but no less important, of quality. Other herbs can interact with prescription medications and may not be appropriate for pregnant women, children, elderly or individuals suffering from severe illnesses. Thus, it is important to have the help of an expert in Ayurvedic medicinal plants and use them with caution.

Folk Medicine and Home Remedies

Traditional health knowledge utilized by ordinary people in families, villages and local communities constitutes folk medicine. Typically derived from experience, not written medical texts. This knowledge is orally transmitted, learnt, observed and practiced from generation to generation. In rural areas folk medicine plays a more significant role as people rely on the plants and household items that are available in the vicinity for minor health ailments. One of the components of folk medicine is home remedies. Plants and kitchen herbs are utilized in many homes for common ailments like cough, cold, fever, indigestion, acidity, minor cuts and wounds, skin irritation, headache and weakness. For instance, ginger tea is given to relieve cough and throat irritation, turmeric milk is used for pain and weakness, Tulsi leaves are used for cold and respiratory issues, Aloe vera gel is applied for minor burns and dryness in skin and Neem leaves are used as skin cleaners. The treatment is widely used as it is easy,



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inexpensive and readily available. Folk medicine is closely related to the local culture and environment. Various climate and soil conditions, as well as availability and local experience, determine the plant selection for different regions. For instance, villagers are aware of the leaves used for medicinal purposes in the village, the use of medicinal seeds for their digestion and the utility of herbs during the change of seasons. Often the people who know the most about this are elderly family members, local healers, midwives and experienced villagers. One of the values of folk medicine is its availability. It offers first-line health care for minor illnesses and assists people to care for themselves with regards to their day-to-day health issues. WHO has also acknowledged the place of traditional medicine in maintaining health of the population and that health systems require policies for traditional and complementary medicine products, practices and practitioners. However, folk medicine also has its drawbacks. Many remedies are of oral origin, and their dose and safety is not well established. Medications and/or plants may be improperly used, misidentified, overused, or utilized for illnesses that cannot be treated with plants. Thus, folk remedies can be used in basic and supportive care but not in serious illness, high fever, infection, poisoning, pregnancy complications and chronic diseases and should not replace modern medical care.

Tribal Medicine Practices

Tribal medicine practices are traditional healing methods that have been created by indigenous and tribal populations who have interacted closely with their forest, plants, animals and natural environment. Healing knowledge is often gained by the people and communities who live amongst nature, the tribal communities. They are aware of medicinal plants for ailments like fever, wounds, snake bite, stomach ailments, skin ailments, joint pain, childbirth and seasonal ailments. This knowledge is typically kept alive through elders, healers, spiritual leaders and traditions within the community. Medicinal plants are used in various ways in tribal medicine including fresh leaves, extracts from roots, bark powder, herbal paste, smoke, etc., oil, decoction, and plant juice. Tribal healers have a way of recognizing plants by their scent, form, time of year, environment and medicinal properties. They can gather particular species of plants from forests, hills, riverbanks or fields where plants have been planted. Their healing practices may also involve rituals, prayers and dietary restrictions, and community-based care, as their ideas of health can be thought of as a balance between body, nature, spirit and society. Tribal medicine is important because it contributes to the maintenance of important ethnomedicinal information. A majority of plants that are used in contemporary scientific studies have been recognized with this approach by indigenous and traditional methods. The significant proportion of pharmaceutical products based on nature and traditional knowledge further underscores the relevance of traditional knowledge and plant-based resources in contemporary medicine, highlighting their ongoing significance in healthcare, as noted by WHO. These practices also apply to rural and remote health care. In forests and tribal regions, hospitals and modern medical facilities might be distant and local medicinal plants play a crucial role in



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providing health care. Tribal healers offer quick care for typical ailments and minor injuries. Their knowledge is also important not only in health care but also in conserving the biodiversity, as they know that medicinal plants are important ecologically. But there are many challenges to tribal medicinal knowledge. Availability of medicinal plants and Traditional Knowledge is decreasing due to deforestation, overharvesting, habitat destruction, climate change and modernization. The threats of overharvesting, destruction of habitats, and climate changes were also identified in a recent study on the medicinal plants traditionally used, with an appeal for their conservation and sustainable use. Thus, tribal medicine practices have to be documented, honored, and scientifically investigated, but not exploited, of tribal communities. They should be safeguarded by ethical research, policies of benefits sharing and conservation. Tribal medicine is an example of a robust connection between human health, culture and biodiversity. It demonstrates that medicinal plants are not only biological resources but also a reflection of the wisdom of the community, traditional heritage and sustainable health care.

Benefits of Medicinal Plants

Medicinal plants are of particular importance for human health and traditional medicine as they are natural, readily available, economical and accepted in society. The people of rural and tribal regions depend on locally available plants like Tulsi, Neem, Aloe vera, Turmeric, Amla, Giloy, Ginger, Ashwagandha and others for common health problems as they can easily be found in their homes, fields, forests or local markets at low cost. This is particularly beneficial to the poor and rural communities where access to modern health facilities and the cost of medicines may be prohibitive. Medicinal plants are also regarded as beneficial as, when properly identified, properly prepared and used in an appropriate amount, they may have fewer side effects when compared to many synthetic medicines; but this does not imply that all herbal medicines are non-toxic because incorrect dosage, adulteration, or use in inappropriate amounts can result in harm. The second great advantage of medicinal plants is their contribution in preventive health care. Numerous plants are rich in vitamins and minerals, antioxidants, anti-inflammatory and antimicrobial agents which boost immunity, aid digestion, help ward off infective diseases and weakness in the body during winters. In traditional medicine, herbs are used in advance of getting ill, so the herbs are used to help to maintain balance and to strengthen the body in a natural way. Medicinal plants also play a role in primary health care, as they are used as primary care of minor diseases like cough, cold, fever, wounds, skin irritation, stomach disorder and body pain. The treatment for the old people and traditional healers takes place in houses and villages, using plant-based remedies for fast and simple treatment. In addition to health benefits, the use of medicinal plants is also significant in sustainable health practices; linking human health with nature, biodiversity and local resources. With proper cultivation and harvesting, medicinal plants can contribute to environmental protection, less reliance on chemical products and the conservation of traditional knowledge for future generations.



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Therefore, medicinal plants are not only a remedy but are also very important in terms of prevention, primary health care, culture and sustainable living.

Challenges in the Use of Medicinal Plants

There are also a number of significant challenges that must be addressed regarding medicinal plants. Many plant based remedies have been passed down through tradition and oral transmission, but may not necessarily have sufficient laboratory testing, clinical trials or scientific evidence to be sure of their safety and efficacy. WHO has also stressed quality, safety and efficacy of herbal medicines. Over-exploitation of medicinal plant species is another problem. Valuable plants are being collected in large numbers from forests and natural habitats and end up being overexploited, thereby compromising biodiversity and rare species due to an increasing demand for herbal medicine, cosmetics and natural products. Problems of adulteration and quality control are also serious considerations with herbal products and sometimes the product may contain incorrect ingredients, harmful chemicals, heavy metals or the wrong plant material. Consistent quality and standardization are necessary to ensure safety, effectiveness and reproducibility of herbal products. Otherwise, traditional medicinal knowledge is also dying out as younger people are not following traditional ways of life, there are few oral traditions that can be easily recorded, and traditional healers are ageing. This loss is not only on the health care knowledge level, but also on the health care cultural heritage level. The other major one is the lack of knowledge regarding the proper dosage and safety. It's often said that naturals are always safe, but it's not always the case. Side effects or health risks can occur if one uses an incorrect dosage, if the plant is used for extended periods of time or if the plants are not identified, or if the herbal remedies are combined with modern medications. WHO guidelines also recommend that herbal medicines are subject to adequate regulation for adequate safety and quality. Thus, medicinal plants have great potential in human health care and need scientific investigation, conservation, documentation, quality control, and awareness among the public.

Table 2: *Benefits and Challenges of Medicinal Plants in Human Health Care*

S. No.	Type	Benefit / Challenge	Value (%)
1	Benefit	Easily available and low-cost treatment	90
2	Benefit	Preventive health care support	85
3	Benefit	Primary health care contribution	82
4	Challenge	Lack of scientific validation	88



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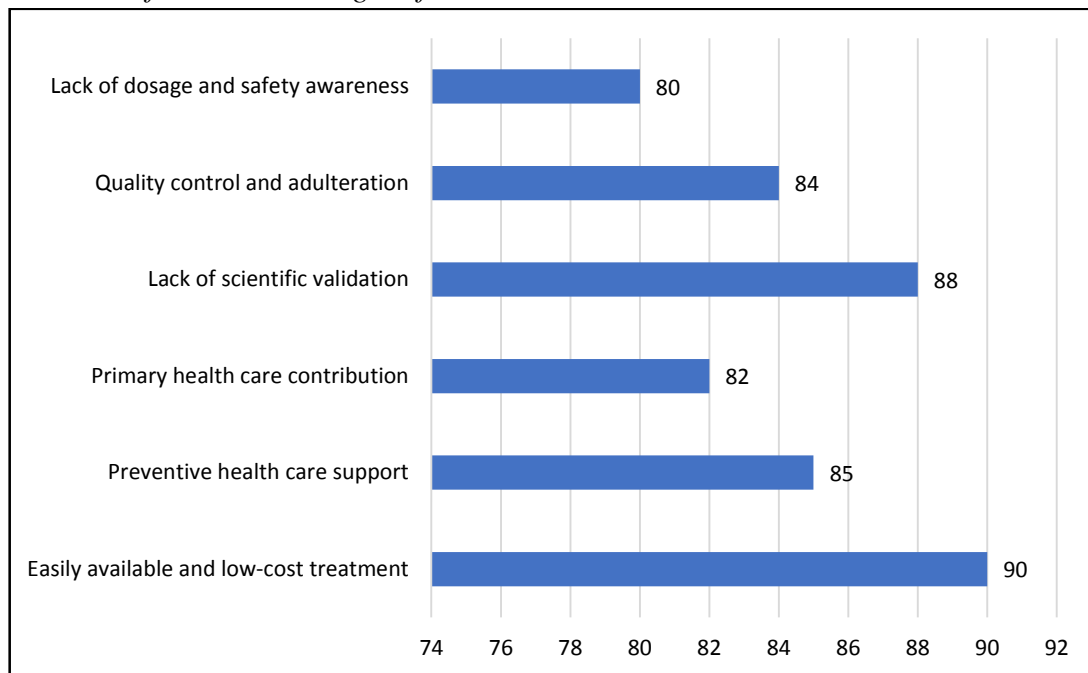
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5	Challenge	Quality control and adulteration	84
6	Challenge	Lack of dosage and safety awareness	80

Figure 2: *Benefits and Challenges of Medicinal Plants in Human Health Care*



The major benefits and challenges of medicinal plants in human health care are presented in Table 2. The table indicates that medicinal plants are very beneficial as they are readily available and cheap to treat with the maximum value of 90%. This means that medicinal plants are particularly valuable for people living in the rural areas and for those who live in poverty, as there are not always modern medical facilities available to them. Preventive health care support is demonstrated by 85%, indicating medicinal plants in maintaining immunity, health and lowering the risk of common diseases. Primary health care contribution value is 82% which indicates that medicinal plants are utilized as first level treatment for minor ailments like cough and cold, wound, fever and digestive problem. The table also shows some key challenges, however. The scientific validation is 88%, which indicates that there is still a lot of traditional remedies that need to be tested scientifically and clinically. Another serious issue is quality control and adulteration, with 84%, which means that the herbal products might contain impurities or incorrect plant material. The value for lack of dosage and lack of safety awareness is 80%, indicating that people are using medicinal plants without proper dosage and without being aware of any possible side effects. Hence, medicinal plants have significant importance



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in health care but for their safe and effective use, there is a need for scientific research, quality control and public awareness.

Modern Relevance of Medicinal Plants

The relevance of medicinal plants in modern times is high as they are not only used in traditional medicine, but also in pharmaceutical industries, herbal markets and integrative health care. The use of medicinal plants in the discovery of drugs and medical research has been recognized as a valuable source for many modern medicines, with approximately 40% of all medicines used today having a natural product origin, according to World Health Organization (WHO). Many plants contain bioactive elements that have antioxidant, anti-inflammatory, anti-microbial and therapeutic properties, which are utilized by pharmaceutical industries to create medicines, supplements, nutraceuticals, cosmetics and therapeutic products. In parallel, the global market for herbs is growing because those looking for natural, plant-based and preventive health care are interested in herbal products. In today's society, the use of herbal teas, immunity stimulators, herbal cosmetics, plant-based supplements and Ayurvedic preparations is common. Incorporation of traditional and modern medicine is also gaining significance for medicinal plants. Thus useful traditional knowledge is being scientifically studied so that safe, effective and evidenced based herbal treatments could come into health care. WHO also highlights the need for the development of traditional and complementary medicine based on adequate evidence, regulation, quality control and safety measures. As such, medicinal plants serve as a link between traditional knowledge and current medicine, and have to be scientifically validated, dosed, standardized and medically safe to be used in medicinal applications.

Conclusion

Medicinal plants play significant role in human health and traditional medicine; they are an important natural resource. They have been utilized for centuries to prevent diseases, treat common health issues and ensure overall health. The study reveals that medicinal plants such as Tulsi, Neem, Turmeric, Aloe vera, Amla, Ashwagandha and Giloy have significant therapeutic values due to their natural compounds that can be used to boost immunity, heal wounds, aid digestion and protect against diseases. Traditional medicine systems such as Ayurveda, folk medicine and tribal medicine have been very instrumental in retaining these traditional knowledge and application of medicinal plants in primary health care. The medicinal plants are particularly valuable because they are readily accessible, low cost and culturally acceptable. They deliver low cost treatment and engage in preventive health care, especially for rural and tribal people. However, medicinal plants utilization is also confronted with numerous challenges. Their safety and efficacy can be compromised by the lack of scientific validation, adulteration, inadequate quality control, over-exploitation of plant species and lack of understanding regarding the correct dosage. Thus, medicinal plants should not be used without any reservations. The use is to be based on scientific research, identification, correct



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dosage, quality control and medical advice. To conclude, medicinal plants provide a linkage between traditional knowledge and health care. Not only are they helpful in treatment, but they are also key for preventive health, conserving biodiversity and living sustainably. Correctly blending traditional knowledge and scientific approaches are vital for the future of medicinal plants.

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