



---

## USES OF MEDICINAL PLANT FOR DISEASE PREVENTION

AJAY KUMAR YADAV

RESEARCH SCHOLR SUNRISE UNIVERSITY ALWAR

DR. AMIT JALINDAR KASABE

ASSOCIATE PROFESSOR SUNRISE UNIVERSITY ALWAR

### ABSTRACT

*The examination of medicinal plants has had a long history, and notably with relation to judging a plant's quality. The original strategies were organoleptic employing the bodily sensations of taste, smell, and sight. Then gradually they went on to more complex instrumental methods. Though many nations have their own traditional remedies China now leads the way in terms of the number of publications focusing on medicinal plant analysis and number of inclusions in their Pharmacopoeia. The monographs included within these papers offer guidance on the sort of analysis that should be undertaken, and for manufacturers, this often implies that they require access to more and more complex apparatus. We have witnessed improvements in many fields of analytical analysis and notably the development of chromatographic and spectroscopic methods and the hyphenation of these techniques. The ability to process data using multivariate analysis software has opened the door to metabolomics giving us greater capacity to understand the many variations of chemical compounds occurring within medicinal plants, allowing us to have greater certainty of not only the quality of the plants and medicines but also of their suitability for clinical research. Refinements in technology have resulted in the capacity to evaluate and classify plants efficiently and be able to identify pollutants and adulterants occurring at extremely low levels.*

**Keywords:** - Medicinal Plant, Complex, Pollutants, Elements, Earths.

### I. INTRODUCTION

Water is one of the most crucial and plentiful elements in the environment. Every living thing on our planet, including humans, depends on water to stay alive and develop. All known forms of life rely on water as a chemical component. Water is found in three different states in nature: liquid, solid, and gaseous. The Earth's surface is covered by 97 percent ocean and just 3 percent

fresh water, making up the vast majority of the planet's water. Icebergs and glaciers make up around two-thirds of fresh water. A mere 0.8 percent of the world's water supply is usable for our everyday activities. At room temperature, water is a clear, colourless liquid with no flavour or odour. The universal solvent, water, is an excellent solvent. Depending on water's polarity, it may either be a solvent or an emulsifier. Because of the water's ability to dissociate and hydrate ionic bonds, it dissolves most inorganic and some organic compounds. Agricultural, industrial, residential, and environmental uses of water are all examples.

Drinking water is essential to the health and well-being of all humans. There is a worldwide shortage of safe and clean drinking water. Water from the earth's surface The majority of a community's water comes from surface water and rains. As long as the water doesn't have a significant mineral concentration, drinking from the ground is frequently the best option. Wells and bore holes may be used to obtain groundwater. Surface water must be treated before it may be consumed by humans. People and animals who defecate in or near water can pollute the water's surface, making it unsafe for swimming or drinking. It is possible to collect rainwater in huge storage basins or smaller containers since the water is so clean. To be safe for consumption, rainwater that has been collected in filthy or otherwise unsanitary containers must be disinfected. Chemical purity isn't something you can count on in naturally occurring fluids. Water interacts with the atmosphere, rocks, and soil as it travels through the environment. Water travelling through the earth receives filtration due to physical, chemical, and biological processes. Dilution, coagulation, precipitation, and adsorption are all examples of physical processes.

Degradation, oxidation, and hydrolysis are all chemical processes, but biodegradation is a biological activity. Organic and inorganic components are both present in pure natural water. There are distinct differences in the concentrations of inorganic chemicals found in natural waterways. Difficult to measure impurities like salt and sulphur dioxide may be present in rainwater as low as one milligramme per millilitre. The water's inorganic concentration rose when it hit the ground. Organic matter, including decomposing waste and industrial pollution, is found in natural streams. As it dissolves in the water, the organic matter undergoes biotransformation into biologically active compounds such as proteins, amino acids, lipids, and glucose.

## **II. INDIAN SYSTEM OF MEDICINE**

As the world's oldest and most comprehensive medical system, Ayurveda, which translates to "science of life," is credited with its origins dating as far back as 5000 B.C. Ayurvedic remedies have been shown to be effective by many Indians and others throughout the world. Panchamahabhutha (five fundamental components of nature), tridosha (three humours) and prakrithi (pranayama) are still relevant today, as are the diagnostic and therapeutic processes utilised (individual constitution).

Sanskrit and other Indian languages provide a wealth of Ayurveda literature on a wide range of ailments, treatments, and pharmacology. Ayurveda has its roots in the Vedas and the Samhitas, which are medical treatises that detail various medical treatments, such as surgery and a kind of massage that targets the body's important energy centres. The Rig Veda and the Atharva Veda, which date from the second millennium B.C., contain the oldest mentions of these plants. Ayurveda's earliest documented book focused mostly on therapeutics and covered everything of the theory and practice of Ayurveda. Ayurveda's essential concepts are laid forth in this book, however the majority of its focus is on digestion (described as internal fire, or agni). On the other hand, the SusrutSamhita is an early classic that deals with surgical procedures. Around 500 A.D., the AstangaHridayam, a text containing most of Ayurveda's specific concepts, such as dosha and subdosha, was composed.

An Ayurvedic work on illness diagnosis known as the MadhavaNidana (800-900 AD) was the next significant milestone. The five elements of Ayurveda (earth, water, fire, air, and space) appear in various quantities in all matter (dravya). Nonliving as well as living materials may be used in the process. Vata, pitta, and kapha are three types of doshas that may be found in nature, depending on the prevalent combination of the elements.

- Vata, linked to the wind, the force that controls movement and the functioning of the nervous system in the body
- Pitta, the force of heat and energy, linked with the sun, that controls digestion and all biochemical processes in the body
- Kapha, the force of water and tides, influenced by the moon, the stabilizing influence that controls fluid metabolism in the body

The body is healthy if these three forces are in harmony, but if they are out of balance, sickness ensues. Traditional medicine in India has a long and distinguished history that includes the two most extensively practiced systems: Ayurveda and Unani. There has been a long tradition of Ayurvedic and Unani medicine in India dating back thousands of years. Ethnomedicine or not, Ayurveda encompasses all aspects of human health, from the physical to psychological to philosophical to ethical and spiritual. In order to live in peace with the Universe, it is essential to maintain a balance between nature and science. It is a medical system unlike any other because of its comprehensive and all-encompassing approach. To sustain good health, this philosophy stresses the significance of maintaining a healthy lifestyle. Nature has given upon us a vast botanical bounty, and a wide variety of wild plants may be found across our land. Since ancient times, different portions of various medicinal plants have been used to treat distinct illnesses in India.

### III. WHAT IS A MEDICINAL PLANT

A medicinal plant is one that has chemicals that may be utilized therapeutically or are precursors to the manufacture of valuable pharmaceuticals in one or more of its organs. This description distinguishes between medical plants that have been scientifically shown to have therapeutic capabilities and ingredients, and medicinal plants that have yet to be scientifically proven to be medicinal.

Traditional medicine has relied on a variety of herbs for a long time. Despite the fact that scientific evidence (such as double-blind studies) is lacking, certain methods seem to be effective. Medicinal herbs should be considered for these kinds of plants. Pharmacists and pharmacologists use the phrase "crude pharmaceuticals of natural or biological origin" to describe complete plants or portions of plants that have therapeutic characteristics. This presentation's definition of medicinal plants.

- a. plants or plant parts used medicinally in galenical preparations (e.g. decoctions, infusions, etc.) e.g. Cascara bark;
- b. plants used for extraction of pure substances either for direct medicinal use or for the hemi-synthesis of medicinal compounds (e.g. hemi-synthesis of sex hormones from diosgenin obtained from *Dioscorea* yams);
- c. food, spice, and perfumery plants used medicinally, e.g. ginger;
- d. Microscopic plants, e.g. fungi, actinomycetes, used for isolation of drugs, especially antibiotics. Examples are ergot (*Clavicepspurpurea* growing on rye) or *Streptomyces griseus*; and
- e. Fiber plants, e.g. cotton, flax, jute, used for the preparation of surgical dressings.

The growing importance of medicinal plants can be appreciated from the economic stand point when the following facts are considered:

- Global trade in herbs is over USD 100 Billion per annum
- India and China's medicinal plant trade is about two to five billion US dollars annually
- In Germany, it is over one billion US dollars annually
- Rose Periwinkle which is endemic to Madagascar fetches US\$100 million per annum
- China trades in 7,000 species and 700,000 tons of medicinal plants per annum
- India trades in 7,000 species of medicinal plants
- Morocco exports 58.7 tons of medicinal plants annually

- In the last 5 years, sales of medicinal plants doubled in China, tripled in India and grew by 25% in Europe.

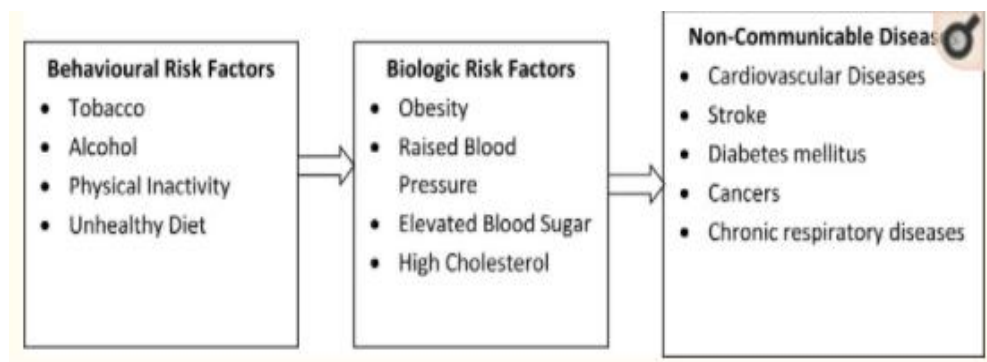
When Nigeria's President formed an initiative committee in 2006 to promote the development and commercialization of Nigerian herbal medical goods, the goal was to reach \$1 billion in sales of medicinal plants and their products within ten years. Medicinal plants seem to have a bright future as a source of health benefits, at least based on present research and financial investments. As a normative foundation for ensuring good health in many poor nations, traditional medicine and medicinal herbs are extensively used. Many new medications and chemotherapeutics derived from medicinal plants as well as traditional rural herbal cures are driving an increased dependence on their usage in industrialised cultures. Herbal treatments have also grown in popularity in these civilizations as a result of the rising expenses of health care and as a means of treating minor diseases. Since the market and public demand for medicinal plants has grown so rapidly, there is a real danger that many species could go extinct or lose their genetic variety.

#### **IV. MEDICINAL PLANTS AND DISEASE PREVENTION**

**Strategies for the Prevention of Communicable diseases** The prevention of communicable illnesses relies on three essential approaches: surveillance, outbreak investigations, and vaccination. As a matter of fact, several traditional medications derived from medicinal plants have been utilised to improve the immune response to a variety of diseases.

**Strategies for Prevention of Non-Communicable Diseases** The WHO 2008 to 2013 Action Plan for the Global Strategy for the Prevention and Control of NCDs articulated an intersect oral, multi-level plan to curb the rising global prevalence of NCDs with particular focus on the low and middle income countries. The overall foci of the plan were to

- map the emerging NCD epidemic and ascertain their social, economic, behavioral and political determinants;
- reduce the level of exposure of individuals and population to the common modifiable risk factors - tobacco use, unhealthy diet, physical inactivity, etc.; and
- Strengthen health care for people with non-communicable diseases through the development of evidence-based norms, standards and guidelines for cost effective interventions.



**Figure 1.1 Causal chain of risk factors for NCDs**

## V. CONCLUSION

Compared to the control group, every plant investigated in this research had anti-inflammatory properties. When compared to higher doses (400 mg/kg), lower doses (200 mg/kg) had superior anti-inflammatory effects, while higher doses (400 mg/kg) had greater anti-inflammatory effects for *A. indica* and *A. mexicana*. With a 200 mg/kg dose and a 400 mg/kg dosage, *G. sylvestre* was more active at 1 and 2 hours. It was shown that methanol extracts of a variety of plants had more anti-inflammatory properties after only one hour than after three hours of incubation with the extracts. *A. The lesser dosage of A. mexicana* methanol extract showed greater effect after three hours than the higher dose after one hour in comparison to the bigger dose. Compared to the methanol extract of *G. sylvestre*, the impact of the methanol extract was more pronounced at 3 hours.

Thus, methanol extracts of *A. indica* (400 mg/kg), *A. mexicana* (400 mg/kg), *A. speciosa* (200 and 400 mg/kg), *C. equisetifolia* (200 and 400 mg/kg), and *P. arguta* (200 and 400 mg/kg) significantly reduced the early phase of inflammation caused by carrageenan, while *A. mexicana* (400 mg/kg), *C. The anti-inflammatory effects of P. arguta* (Leaf + stem) was chosen for further pharmacognostic, toxicological, and pharmaceutical examination because of its leaf and stems.

## REFERENCES

1. M. M. Pandey, SubhaRastogi, A. K. S. Rawat, "Indian Traditional Ayurvedic System of Medicine and Nutritional Supplementation", *Evidence-Based Complementary and Alternative Medicine*, vol. 2013, Article ID 376327, 12 pages, 2013. <https://doi.org/10.1155/2013/376327>
2. Effendy NM, Mohamed N, Muhammad N, Mohamad IN, Shuid AN. *Eurycomalongifolia*: Medicinal Plant in the Prevention and Treatment of Male Osteoporosis due to Androgen

Deficiency. Evidence-Based Complementary and Alternative Medicine 1-9. 2012  
doi: 10.1155/2012/125761. Article ID 125761.

3. Adhikari, P. P., and S. B. Paul. "HISTORY OF INDIAN TRADITIONAL MEDICINE: A MEDICAL INHERITANCE". Asian Journal of Pharmaceutical and Clinical Research, vol. 11, no. 1, Jan. 2018, pp. 421-6, doi:10.22159/ajpcr.2018.v11i1.21893.
4. Abel C, Busia K. An exploratory ethnobotanical study of the practice of herbal medicine by the Akan Peoples of Ghana. *Alternative Medicine Review*. 2005;10(2):111–122.
5. Effendy NM, Mohamed N, Muhammad N, Mohamad IN, Shuid AN. Eurycomalongifolia: Medicinal Plant in the Prevention and Treatment of Male Osteoporosis due to Androgen Deficiency. Evidence-Based Complementary and Alternative Medicine 1-9. 2012  
doi: 10.1155/2012/125761. Article ID 125761.
6. Elujoba AA, Odeleye OM, Ogunyemi CM. Traditional Medical Development for Medical and Dental Primary Healthcare Delivery System in Africa. *Afr J Traditional, Complementary and Alternate Medicine*. 2005;2(1):46–61.