**International Journal of Engineering, Science and Mathematics**
Vol. 12 Issue 3, March 2023,
ISSN: 2320-0294 Impact Factor: 6.765
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage as well as in Cabell's Directories of Publishing Opportunities, U.S.A

# TO ANALYSE THEORGANOLEPTICPROPERTIES, DENSITY AND ASH VALUES INTHE SELECTED MADECINAL PLANTS

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## ABSTRACT

India has extensive traditional knowledge regarding the still-valuable uses of medicinal plants. The utilisation of local flora for medical purposes is referred to as traditional knowledge of medicine. Every community has a distinctive set of information that is peculiar to that community. Most societies lack documentation of their knowledge of therapeutic plants. A circumstance where forgetting this information is possible has been produced by a drastic shift in society and the effect of modern treatment with relatively speedy cure. This encourages the gathering and recording of such data. By completing these tasks, science will learn at least some new population-related knowledge. The result of ethnobotanical studies is this. Additionally, this is crucial for the preservation and sustainable exploitation of medicinal plant natural resources.Traditional medicine isthesynthesisoftherapeuticexperienceofgenerations of practicing physicians of indigenous system of medicine. Herbaldrugs continue only those traditional medicines which primarily use medicinalplant preparation for therapy.

**KEY WORDS**: **Organoleptic Properties, Density And Ash Values, Madecinal Plants.**

## INTRODUCTION

India is the home to many tribal communities and ranks seventh among the world's biodiversity hotspots. Aboriginal people developed a vast body of knowledge about the plants and their applications through comprehending the surrounding nature to satisfy their requirements. The majority of this knowledge is not documented, but it is nonetheless valuable. This has rendered this knowledge unavailable to human society. Therefore, ethnobotanical research are essential for preserving this priceless ethnographic knowledge. "The study of the interaction that exists between members of prehistoric societies and their plant environment" is the definition of ethnobotany (Schultes 1962). It is simply a method of approaching botany from an anthropological perspective. North American botanist Harshberger first used the term ethnobotany in 1895 to describe the study of plants used by primitive and indigenous people. People have used thousands of plants to treat a wide range of illnesses since the dawn of time. All nations throughout the world rely heavily on medicinal plants for their economies and health care systems. The Rigveda (4500–1500 BC), which identified 67 plants having therapeutic purposes, is the most significant of the Vedic texts and contains the earliest evidence of medicinal plant uses (1500 BC). Similar to this, the Atharvaveda lists 290 therapeutic plants after the Yajurveda cites 81. The lists of 19000 plant drugs and their products for use in health management are mentioned in the Vedas, followed by three important ayurvedic works like Charakasamhitha, Sushruthasamhitha, and Ashtangahrudaya (Trivedi, 2009).

The wealth of indigenous knowledge is completely unknown to individuals in the modern world. Tribal communities typically reside in diverse geographic and climatic regions with rich flora and wildlife. They belong to many ethnic groupings. Since the majority of these tribal cultures lack a written language to record information on prescriptions, methods of use, and diagnoses. Many tribal cultures regularly use wild plants as part of their diets, as well as when there is a lack of food or a drought (Narayanan and Anilkumar, 2007). Only 30 species alone account for more than 90% of the world's calories consumed, and 120 species are economically significant on a national scale out of the 3000 edible plant species known to humans (FAO,1993). There are 42 million tribal people in India, and 60% of them live in forests and depend on a variety of edible forest resources (Jain and Chauhan, 1998).

Recent research on conventional medicine has made it possible to identify other plants that produce drugs. Therefore, it is crucial to gather data, provide documentation, and conduct research on ethnomedicine. Indigenous wisdom was losing faster because of the interference of western lifestyles, the lack of enthusiasm among younger generations in passing down their traditional knowledge, and the decline in the number of traditional medical practitioners. Therefore, the current study attempted to identify plants as the source of new medications against infectious bacteria while also collecting and documenting indigenous knowledge through ethnobotanical survey and antibacterial screening of some selected plants.

## *TRADITIONALMEDICINALSYSTEMSININDIA*

Before the advent of modern medicine, various cultures and societies evolved their own medical systems, which are explained by traditional medicine. Indian traditional medicine can be broadly divided into two categories: the empirical forms of folk remedies, which are village-based, region-specific, dependent on local resources, or community-based; and the scientific stream-based system, which includes Ayurveda, Siddha, and Unani. Tribal herbal medicine knowledge systems will be valuable for further research by phytochemists and pharmacologists (Madhu et al., 2010).

Traditional medicine, according to the World Health Organization, is defined as "the health practises, approaches, knowledge and belief incorporating plant, animal and mineral based medicines, spiritual therapies, manual exercise, applied alone or in combination to treat, diagnose and prevent illness or maintain well-being" (Zawar, 2011). Generation after generation has employed this medical method unchanged since its inception to address a variety of illnesses. In many instances, the individuals who choose to take traditional medicines do so under the influence of their conventions, beliefs, social mores, religious convictions, superstitions, and folklore practises. Ethnic medicine is more likely to use it. The use of medicinal plants in traditional medicine dates back to ancient India, China, Africa, Arabia, Europe, Egypt, Greece, Latin America, and North America.

Traditional medicine treats the entire part of the body rather than just one particular component. By closely observing patients, asking them about their symptoms, listening to them describe their illnesses, and learning about their past, traditional practitioners diagnose illnesses the old-fashioned manner. Medicines in the traditional medical system are made up of one or more components that can be administered in a variety of ways, including decoction, liquid, infusion, semisolid, solid, and even gas. The majority of prepared medications are administered to patients orally or topically to the affected body regions. Some of them, however, are applied internally via the body's different holes.

More than 80% of people around the world, according to WHO, rely on traditional medicine for their medical requirements (Clixto, 2005). The majority of the population in rural India heavily relies on conventional medical treatments. India is fourth among Asian nations and tenth worldwide in terms of lush flora (Lokesha et al., 1997). There are 5332 endemic plant species in the Western Ghats and Eastern Ghats, two of the world's top 25 hotspots, which are both in India (Myers et al., 2000). The locals and tribe members who have settled in these areas use the abundant therapeutic plants that grow there. Ayurveda, Siddha, Unani, Naturopathy, Homeopathy, and Yoga have all long operated in conjunction with one another. When compared to contemporary medicine, especially in developing nations, traditional remedies are more popular and attractive because they have less adverse effects, are more affordable, and are simpler to get.

***ROLE OF ETHNOBOTANY IN RELATION TO MEDICINALPLANTS***

The many ethnic groups have created their own cultures, traditions, rituals, tales, myths, folklore, and medical practises. Numerous cultivated and wild plants have an important place in tribal culture, and interactions with them have been sustained for many generations. Since the dawn of time, people have used ethnobotany to treat illnesses and maintain their health (Singh et al., 1994). The existence of life on earth depends in large part on plants, and humans have used plants as a source of medicine for as long as there have been people (Saikia, 2006).

Botanists, archaeologists, anthropologists, plant geographers, linguists, pharmacologists, and phytochemists will all benefit greatly from systematic studies in ethnobotany (Jain, 1997). It is highly challenging to gather such important data from tribal areas or from ethnic groupings. The plants that are employed in conventional medicine are frequently region-specific and profoundly ingrained in conventional, social, cultural, and religious values. Nowadays, everyone on earth is aware of the worth and significance of conventional medicines. Therefore, we should prioritise protecting therapeutic plants. In addition to conservation, we must prevent overuse of medicinal plants and raise awareness of the value of cultivating rare, endemic, and endangered medicinal plants as well as the need to preserve genetic material.

Ethnobotany offers a variety of methods for studying plants as sources that support plant research. Mahdihassan (1963) found a plant from a painting showing Lord Buddha being presented with a bundle of herbs in his hand named Ephedra or soma by looking at morphological traits, which can help in tracking plants that were employed in ancient civilization. The Rigveda, Yajurveda, and Atharvaveda as well as three important Ayurvedic books like CharakaSamhitha, SushrathaSamhitha, and AshtangaHridaya were important sources of information about medicinal plants. Field notes and herbarium sheets were also employed as a basis for gathering ethnobotanical information. By scanning 2.5 million herbarium specimens at the Harvard University Herbarium, Altschul (1973) discovered 5178 plants with therapeutic qualities. Additionally, the knowledge that ethnobotanists gathered on the ground regarding the therapeutic plants from tribal people is crucial for ethnobotanical studies.

## RESEARCH METHODOLOGY

### SOURCEOFTHEPLANT

Plant components such as Gynandropsisgynandra-leaf (Cleome gynandra), Luffa cylindrical-leaf (Luffaaegyptiaca), Artocarpusheterophyllus-leaf, LawsoniaInermis-leaf, Euphorbia Nerifolia-leaf, PongamiaPinnata-leaf, and PongamiaPinnat All of the plants were chosen based on existing research, which indicated that all of the selected plant parts (leaves) were high in antioxidant phytochemicals such as flavanoids, phenolic derivatives, and other compounds. Plant material was thoroughly identified and authenticated when it was collected. A specimen of the obtained plant material was deposited in the herbarium of the University College of Pharmaceutical Sciences' Department of Pharmacology, and a voucher was submitted (Specimen number). The plant components (leaf) were collected, rinsed with distilled water, and dried in the shade. After drying, all of the plant materials (leaves) were ground into a coarse powder. After that, the powdered material was sieved no 44 to ensure uniform particle sizes, and then it was kept in an airtight and color-coded container to keep it stable until it was needed again.

### EXTRACT PREPARATION

Each plant (dry leafs) powder (500gms) was refluxed three times with 5L of solvent for six hours each time. It was then concentrated at 70-750C under vacuum. The herbal extracts were bottled and labelled separately in airtight, light-resistant glass bottles. The phytochemical analysis of the produced extracts was used to determine the various phytoconstituents present in the plant extracts, and the percentage yield was calculated.

#### Ash values

#### Total ash

Air dried crude herbal material (2 g) was placed in a tarred silica crucible and incinerated at 4500C until free from smoke (due to carbon). Later, it was cooled and weighed.

**%Total Ash value = Wt. of total ash/Wt. of crude drug X 100**

#### Acid insoluble ash

Ash obtained from previous step was boiled with 25 mL HCl (2M) for 5 min. It was filtered through ash less filter paper and washed with hot water. Later, paper was ignited, cooled in dessicator and weighed.

**% Acid insoluble ash value = Wt. of Acid insoluble ash/Wt. of crude drug X 100**

**Water soluble ash**

Ash collected in the first step was boiled for 5min with 25 mL of water. Insoluble matter was collected using ash less filter paper and washed again with water, ignited for 15min (<4500C) then cooled. Water soluble ash content was measured by subtracting the Weight of the insoluble matter from weight of the ash.

**% Water soluble ash value = Wt. of Water soluble ash/Wt. of crude drug X 100**

## RESULTS AND DISCUSSION

### Organolepticevaluation

Organoleptic qualities are difficult to assess because there are no standard lab tests and the process necessitates experts with extensive experience. For the Gynandropsisgynandra, Luffa cylindrical, Artocarpusheterophyllus, Lawsoniainermis Linn, Euphorbia nerifolia, and Pongamiapinnata, the following organoleptic qualities of the plant components were surveyed: physical appearance, aroma, and taste.

**TableNo.1:Theorganolepticpropertiesoftheplantextracts**

| **Properties** | *Gynandropsisgynandra* | *Luffa cylindrica* | *Artocarpusheterophyllus* | *LawsoniainermisLinn* | *Euphorbianerifolia* | *Pongamiapinnata.* |
|---|---|---|---|---|---|---|
| **Color** | Green | Brown | Greenishbrown | Green | Green | Green |
| **Odour** | Characteristic | Characteristic | Characteristic | Characteristic | Characteristic | Characteristic |
| **Taste** | HighBitter | Bitter | Bitter | HighBitter | Bitter | Bitter |

**Determinationofforeignmatter:**

Molds, insects, and other pollutants, including animal excreta, should be absent from therapeutic plant materials. Before cutting or grinding therapeutic plant materials for testing, any dirt, stones, sand, dust, or other natural matter had to be removed. For the detection of foreign particles in whole or cut plant materials, microscopic inspection was used. The percentage of foreign matter present in Gynandropsisgynandra, Luffa cylindrical, Artocarpusheterophyllus, Lawsoniainermis Linn, Euphorbia nerifolia, and Pongamiapinnata was determined, and the results are presented in Table-2.

**Table No.2: Determinationofforeign matterin the plantextract**

| S.No | Nameoftheplantsamples | Valuesobtained(%w/w) |
|---|---|---|
| 1. | *Gynandropsisgynandra* | 7.7% |
| 2. | *Luffacylindrica* | 5.3% |
| 3. | *Artocarpusheterophyllus* | 6.4% |
| 4. | *LawsoniainermisLinn,* | 4.9% |
| 5. | *Euphorbianerifolia* | 5.5% |
| 6. | *Pongamiapinnata* | 3.9% |

**Density,BulkDensity,Tappingdensity**

The densities of Gynandropsisgynandra, Luffa cylindrical, Artocarpusheterophyllus, Lawsoniainermis Linn, Euphorbia nerifolia, and Pongamiapinnata extracts were 5.11-6.98 g/ml, 0.25-0.89 g/ml, and 0.29-0.69 g/ml, respectively. The flow qualities of the plant extract powders may all be classified as excellent or good.

**TableNo.3:Determinationofdensity,bulkdensityandtappingdensityoftheplantextract.**

| S.No | Nameoftheplantsamples | Density(%w/w) g/ml | bulkdensity g/ml | Tappingdensity g/ml |
|---|---|---|---|---|
| 1. | *Gynandropsisgynandra* | 5.12 | 0.46 | 0.69 |
| 2. | *Luffacylindrica* | 6.33 | 0.42 | 0.57 |
| 3. | *Artocarpusheterophyllus* | 5.99 | 0.53 | 0.50 |
| 4. | *LawsoniainermisLinn,* | 6.12 | 0.26 | 0.70 |
| 5. | *Euphorbianerifolia* | 5.33 | 0.59 | 0.46 |
| 6. | *Pongamiapinnata* | 6.99 | 0.88 | 0.30 |

**Ashcontentoftheplants:**

**TableNo.4:DeterminationofTotalash,AcidsolubleashandAcidinsolubleash**

| **S. No** | **Nameoftheplant** | Totalash(**% W/W*)** | Acidsol ubleash (**%W/W*)** | Acidinsolub leash **(%W/W*)** | **LossonDrying%** |
|---|---|---|---|---|---|
| 1. | *Gynandropsisgyn andra* | 4.13 | 0.59 | 0.69 | 5.9 |
| 2. | *Luffacylindrical* | 3.83 | 0.25 | 0.74 | 5.4 |
| 3. | *Artocarpushetero phyllus* | 2.89 | 0.13 | 0.46 | 6.4 |
| 4. | *Lawsoniainermis Linn,* | 3.69 | 0.59 | 0.22 | 2.4 |
| 5. | *Euphorbianeri folia* | 4.03 | 0.46 | 0.52 | 6.5 |
| 6. | *Pongamiapin nata* | 5.22 | 0.99 | 0.37 | 4.9 |

The ash level of the studied plant extracts ranges from 4.13% to 25%. The acid soluble ash concentration ranged from 0.13 percent (Artocarpus heterophyllus) to 0.98 percent (Pongamiapinnata), whereas the acid insoluble ash content was 0.22 percent (Lawsoniainermis Linn) to 0.74 percent (Pongamiapinnata) (Luffa cylindrical). The Luffa cylindrical had the greatest ash content (0.74 percent w/w), indicating the amount of organic and inorganic components contained in plant extract.

**Yieldofplantextracts**

The total yield of plant extracts varies depending on the solvents employed in this experiment. Brideliandellensis and Euphorbia nerifolia alcoholic extracts had a greater yield (9.12 mg/g). In general, the capacity of a component to extract appears to be influenced by the polarity of the extraction medium and the solute-to-solvent ratio.

**TableNo. 5: Yield ofplantextracts**

| **Solventextracts** | ***Gynandropsisgynandra L.(g)*** | ***Luffacylindrica*(L.)Rox.** ***(g)*** | ***ArtocarpusheterophyllusLam(g)*** | ***Lawsoniainermis L(g)*** | ***Euphorbianerifolia.(g)*** | ***Pongamiapinnata (g)*** |
|---|---|---|---|---|---|---|
| Petroleum etherextract | 3.65 | 3.47 | 4.7 | 2.66 | 3.56 | 2.7 |
| Ethylacetate extract | 5.7 | 6.8 | 5.79 | 4.6 | 6.5 | 4.13 |
| Alcoholextract | 9.64 | 8.46 | 8.65 | 8.76 | 9.13 | 8.93 |

**CONCLUSION**

Since the beginning of time, plants have been closely associated with the history of pharmaceuticals, and even now, products from plants are still widely used in traditional and ethnomedical systems of treatment. Plants, animals, and minerals are examples of natural resources that have been used to treat human diseases. The history of medicine almost predates the development of human civilisation. Over the past forty years, there has been a tremendous growth in interest in medicinal plants. The untapped resources of the plant kingdom have drawn the attention of major pharmaceutical corporations and research organisations looking for new medications and lead compounds. Through years of scientific research and observation, allopathy has progressively evolved into the acknowledged contemporary medicine it is today. However, traditional medicine and therapies continue to serve as an important foundation for its development and will continue to be utilised in modern medicine and therapeutics.

**REFERENCES**

1. Mandlik RV, Desai SK, Naik SR, Sharma G, Kohli RK. Antidiabetic activity of a polyherbal formulation (DRF/AY/5001). Indian Journal of Experimental Biology,2008; 46: 599-606.

2. Bera TK, De D, Chatterjee K, Ali KM, Ghosh D. Effect of Diashis, a polyherbal formulation, in streptozotocin-induced diabetic male albino rats. International Journal of Ayurveda Research, 2010; 1: 18-24.
3. Dienstag JL, Isselbacher KJ, Toxic and drug- induced hepatitis, 15th edn.
4. Chapter 296, In: Harrison's Principles of Internal Medicine. Braunwald E, et al, The McGraw- Hill Companies, 2001; 2:737- 1742.
5. Chattopadhyay RR, Bhattacharyya SK, Terminaliachebula: An update, Pharmacog. 2007; 1(1):439–45.
6. OluseyiAdeboyeAkinloye, MoshoodOlajireOlaniyi, Hepato-protective effect of Cajanuscajan on tissue defense system in D-galactosamine-induced hepatitis in rats, Turk J Biochem, 2011; 36(3): 237–241.
7. ShivanandaNayak B, Julien R. Marshall, Godwin Isitor, Andrew Adogwa, Hypoglycemic and hepatoprotective activity of fermented fruit juice of Morindacitrifolia (Noni) in diabetic rats, Evidence-Based Complementary and Alternative Medicine, 2011; 1-5
8. Gupta Amartya K, GangulyPartha, MajumderUpal K, GhosalShibnath, Hepato-protective & antioxidant effect &stereoidalsaponins of solanum of Solanumxanthocarpum&SolanumnigruminParacetomol induced hepatotoxicity in rats. Pharmacology online 2009; 1: 757-768.
9. Pawar S, Patil DA. Certain unconventional food plants of Jalgaon district (MS). J NonTimber Products, 2000; 7:229-32.
10. Raj DS, Vennila JJ, Aiyavu C, Panneerselvam K. The he-patoprotective effect of alcoholic extract of Annonasquamosaleaves on experimentally induced liver in-jury in Swiss albino mice. Int J Int Bio, 2009; 5(3): 162- 166.
11. JesikaRane, Rajesh Jadhao, R. L. Bakal. Liver diseases and herbal drugs:A review. Journal of Innovations in Pharmaceuticals and Biological Sciences. 2016; 3 (2): 24-36.
12. The Ayurvedic Pharmacopoeia of India. Part-1 Volume-1:13.