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ORGANOLEPTIC PROPERTIES AND FOREIGN MATTER STUDY OF SELECTED PLANTS EXTRACTS

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ABSTRACT

Ayurveda is one of India's traditional medical systems. Ayurveda's concept is based on avoiding unnecessary pain and enjoying a long and healthy life. Ayurveda uses natural components to address the fundamental cause of disease by restoring balance while also promoting a healthy lifestyle to prevent recurrence of imbalance. Medicinal plants have long been utilised as medicines, and they continue to play an important part in human health care. The understanding of the basic principles underpinning the biochemical events leading to drug actions is a reasonable approach to the study of medications and their activities, as there has been a visible concern for health care and the cure of diseases throughout human history. According to the World Health Organization, traditional medicine is used by 65-80 percent of the world's population as their major source of health care. Herbal medicine, which is the most common kind of medical therapy in developing countries, is now becoming more popular in wealthy countries. Many people believe that herbal medicines are completely "safe" because they are "natural". Herbal medicines are in high demand due to their broad biological activities, higher safety margins, and lower costs than synthetic drugs.

KEY WORDS: Organoleptic Properties, Foreign Matter, Selected Plants Extracts

INTRODUCTION

Herbal medications have a long history in medicine, and they were utilized for numerous therapies in ancient Chinese, Greek, Egyptian, and Indian medicine. According to the World Health Organization, traditional medicines are still used by 80 percent of the world's population for health care. With over 45,000 plant species, India's subcontinent is well-known as one of the world's main biodiversity hotspots. About 15,000 medicinal plants have been identified in India, with people using 7,000-7,500 of them to treat various maladies. Single or many herbs (polyherbal) are utilized in Ayurveda for therapy. Polyherbalism was emphasised in the Ayurvedic literature Sarangdhar Samhita' to obtain better medicinal effectiveness. Individual plant active phytochemical components are inadequate to provide the desired therapeutic effects. When numerous herbs are combined in a certain ratio, the medicinal impact is enhanced and toxicity is reduced.

Plants from Gynandropsis gynandra, Luffa cylindrica, and Artocarpus heterophyllus, and Lawsonia inermis Linn, Euphorbia nerifolia, and Pongamia pinnata. The antioxidant properties of these formulations were investigated. Plant samples were examined for organoleptic features, such as appearance, color, taste, and odor, as well as physicochemical properties, such as pH, total ash, sulphated ash, acid-insoluble ash, total solids, and specific gravity, as well as phytochemical screening for secondary metabolites (glycosides, alkaloids, tannins, saponins, flavonoids, anthraquinones, anthracene).

The size of the capsule shell that could be employed was largely determined by the bulk density of the contents. The bulk densities of Lawsonia inermis and Luffa cylindrica were higher than the bulk densities of the other plant extracts, according to the results of the pre-preparation investigation. The bulking qualities of a powder are determined by how the sample was prepared, treated, and stored, in other words, how it was handled. The particles can be packed to have a variety of bulk densities, and even little disturbances in the powder bed can cause a change in bulk density. The flowability of bulk solids is determined by the range of bulk density and tapping density of the samples.

In this study, bioactive compounds were extracted from the plants of Gynandropsis gynandra, Luffa cylindrica, and Artocarpus heterophyllus in poly herbal preparation-I, and Lawsonia inermis Linn, Euphorbia nerifolia, and Pongamia pinnata in poly herbal preparation-II using a sequential extraction involving solvents of decreasing polarity (Petroleum ether, eth Because the nature and polarity of the selected plants were unknown, a sequential extraction approach was employed. Petroleum ether is known to extract low-polarity molecules such fatty acids, waxy fatty acids, alkaloids, and terpernoid aglycones. Flavonoids, tannins, and certain terpenoids are known to be extracted using ethyl acetate, which has a medium polarity. Alcohol, on the other hand, is known to extract highly polar molecules such glycosides, polysaccharides, amino acids, and derivatives.

RESEARCH METHODOLOGY

PREPARATION OF PLANT EXTRACT

Plant components from Gynandropsis gynandra-Leaf (Cleome gynandra), Luffa cylindrical-Leaf (Luffa aegyptiaca), Artocarpus heterophyllus-Leaf, Lawsonia Inermis-leaf, Euphorbia Nerifolia-leaf, and Pongamia Pinnata-leaf were obtained in the foothills of Ti All of the plants were chosen based on available research, which indicated that all of the selected plant parts (leaves) were high in antioxidant phytochemicals such as flavanoids, phenolic derivatives, and other compounds. The research was conducted, completely identified and authenticated plant material after collection. 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.

EVALUATION OF PHYSICOCHEMICAL PROPERTIES FOR PLANT LEAF POWDER

Organoleptic qualities (color, odor, and taste) were assessed physically, as well as density, moisture content/loss on drying, ash values, extractive values, microbiological load, and phytochemicals.

ORGANOLEPTIC EVALUATION

a) Colour

The color of the herbal powder was observed and recorded with the naked eye.

b) Odour

The subject smelled the herbal powder three times at a two-minute interval to cancel out the prior odor sensation.

c) Taste

Individuals were given a pinch of herbal powder to put on their tongues, and the flavor was recorded.

DETERMINATION OF FOREIGN MATTER

The powdered sample (10g) was evenly placed on a white tile without overlapping and examined for the presence of any foreign organic matter using a 5X lens. If it was found, the specific matter was weighed and the percent by weight was computed.

DENSITY

- **Bulk density**

The bulk density device was filled with precisely weighed powdered plant material, and the timer knob was set to 100 tappings. The total volume obtained will be referred to as the bulk volume. It can be calculated with the use of a formula.

Bulk Density (ρ) = Mass of powder/Bulk volume

- ***Tapped density***

A measuring cylinder was filled with precisely weighed powdered plant material and mechanically tapped on a flat surface. The final volume change obtained will be referred to as tapped volume. It can be calculated with the use of a formula.

Tapped Density (ρ) = Mass of powder/Tapped volume

- ***Loss on drying***

A weighed amount of plant material powder (5 g) was placed in a shallow dish with a tarred flat bottom. The ingredients in the meal were baked (1050C for 3 hr). It was then weighed after being placed in a dessicator. The drying, cooling, and weighing process was repeated until a constant weight was achieved. The percentage water loss during drying was estimated using an air dried medication as a reference.

Loss on drying (%) = Loss in weight/W X 100

ASH VALUES

- **Total ash**

2 g of air dried crude herbal material was placed in a tarred silicon crucible and burned at 4500C until smoke was no longer present (due to carbon). It was then chilled and weighed.

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

- ***Acid insoluble ash***

The ash from the previous stage was heated for 5 minutes in 25 mL HCl (2M). It was filtered and cleaned with hot water using ash-free filter paper. Later, the paper was burned, then weighed after cooling in a dessicator.

% Acid insoluble ash value = Wt. of Acid insoluble ash/Wt. of crude drugX 100

- ***Water soluble ash***

The ash from the first stage was heated for 5 minutes in 25 mL of water. Insoluble waste was collected using ash-free filter paper and cleaned again with water before being burned for 15 minutes at 4500 degrees Celsius and cooled. By subtracting the weight of the insoluble materials from the weight of the ash, the water soluble ash concentration was calculated.

% Water soluble ash value = Wt. of Water soluble ash/Wt. of crude drug X100

RESULTS AND DISCUSSION

ORGANOLEPTIC EVALUATION

Organoleptic qualities are difficult to assess because there are no standard lab tests and the process necessitates experts with extensive experience. For the Gynandropsis gynandra, Luffa cylindrical, Artocarpus heterophyllus, Lawsonia inermis Linn, Euphorbia nerifolia, and Pongamia pinnata, the following organoleptic qualities of the plant components were surveyed: physical appearance, aroma, and taste.

Table No 1: The organoleptic properties of the plant extracts

Properties	*Gynandropsis gynandra*	*Luffa cylindrica*	*Artocarpus heterophyllus*	*Lawsonia inermis Linn*	*Euphorbia nerifolia*	*Pongamia pinnata.*
Color	Green	Brown	Greenish brown	Green	Green	Green
Odour	Characteristic	Characteristic	Characteristic	Characteristic	Characteristic	Characteristic
Taste	High Bitter	Bitter	Bitter	High Bitter	Bitter	Bitter

DETERMINATION OF FOREIGN MATTER:

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 Gynandropsis gynandra, Luffa cylindrical, Artocarpus heterophyllus, Lawsonia inermis Linn, Euphorbia nerifolia, and Pongamia pinnata was determined, and the results are presented in Table.

Table No. 2: Determination of foreign matter in the plant extract

S.No	Name of the plant samples	Values obtained (%w/w)
1.	*Gynandropsis gynandra*	7.7 %
2.	*Luffa cylindrica*	5.3 %
3.	*Artocarpus heterophyllus*	6.4 %
4.	*Lawsonia inermis Linn,*	4.9 %
5.	*Euphorbia nerifolia*	5.5 %
6.	*Pongamia pinnata*	3.9 %

DENSITY, BULK DENSITY, TAPPING DENSITY

The densities of Gynandropsis gynandra, Luffa cylindrical, Artocarpus heterophyllus, Lawsonia inermis Linn, Euphorbia nerifolia, and Pongamia pinnata 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.

Table No. 3: Determination of density, bulk density and tapping density of the plant extract.

S.No	Name of the plantsamples	Density (%w/w) g/ml	bulk density g/ml	Tapping density g/ml
1.	*Gynandropsis gynandra*	5.12	0.46	0.69
2.	*Luffa cylindrica*	6.33	0.42	0.57
3.	*Artocarpus heterophyllus*	5.99	0.53	0.50
4.	*Lawsonia inermis Linn,*	6.12	0.26	0.70
5.	*Euphorbia nerifolia*	5.33	0.59	0.46
6.	*Pongamia pinnata*	6.99	0.88	0.30

ASH CONTENT OF THE PLANTS:

Table No. 4: Determination of Total ash, Acid soluble ash and Acidinsoluble ash

S.No	**Name of theplant**	Total ash (**%W/W***)	Acid soluble ash (**%W/W***)	Acid insoluble ash (**%W/W***)	**Loss on Drying %**
1.	*Gynandropsis gynandra*	4.13	0.59	0.69	5.9
2.	*Luffa cylindrical*	3.83	0.25	0.74	5.4
3.	*Artocarpus heterophyllus*	2.89	0.13	0.46	6.4
4.	*Lawsonia inermis Linn,*	3.69	0.59	0.22	2.4
5.	*Euphorbia nerifolia*	4.03	0.46	0.52	6.5
6.	*Pongamia pinnata*	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 (Pongamia pinnata), whereas the acid insoluble ash content was 0.22 percent (Lawsonia inermis Linn) to 0.74 percent (Pongamia pinnata) (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.

YIELD OF PLANT EXTRACTS

The total yield of plant extracts varies depending on the solvents employed in this experiment. Bridelia ndellensis 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.

Table No. 5 Yield of plant extracts

Solvent extracts	***Gynandropsis gynandra L. (g)***	***Luffa cylindrica* (L.) Rox. *(g)***	***Artocarpus heterophyllus Lam(g)***	***Lawsonia inermis L (g)***	***Euphorbia nerifolia. (g)***	***Pongamia pinnata (g)***
Petroleum ether extract	3.65	3.47	4.7	2.66	3.56	2.7
Ethyl acetate extract	5.7	6.8	5.79	4.6	6.5	4.13
Alcohol extract	9.64	8.46	8.65	8.76	9.13	8.93

CONCLUSION

The primary notion for disease treatment is to remove the causal elements and bring the body's processes back into appropriate balance. Prior to medication, the patient must follow a healthy diet and avoid certain habits. Food can affect gastrointestinal tract, dermatological, neurological, cardiovascular, gynaecological, and orthopaedic illnesses both directly and indirectly. In the therapy of any disease, herb–food interactions are extremely important. In terms of treatment, ayurvedic physicians' advise should always be followed. The treatments in the ayurveda system are given on an empty stomach because they are plant-based and therefore slow-acting.

Curing was largely mystical and based on logic rather than empirical proof at the dawn of human cultural evolution. Without any written documentation or control, there was no uniform or systematic procedure for keeping the invention of these plants and knowledge about their medical virtues. As a result, it is critical that such natural product applications be documented and examined so that they can be regulated and widely used. The World Health Organization has recognised the value of traditional medicine and has developed plant medicine initiatives, guidelines, and standards. Plant-based materials are prone to contamination, degradation, and compositional changes. As a result, procedures for the rapid, precise, and accurate identification and estimate of active elements must be developed in order to ensure consistency of essential constituents in formulations.

Plant-based weapons have been used to battle diseases and harm to health since the start of human civilisation. The prehistoric man was at the mercy of nature and always afraid of getting sick. Since the beginning of time, tribal priests and healers have employed a variety of plants, minerals, and animal parts, frequently in connection with bizarre ceremonies to ward off the bad spirits that they thought to be the root of illnesses. In locations where people still live in agrarian communities, this belief of demonic possession has persisted for many generations. A significant number of the medications used in modern medicine were in use even in ancient times, according to records from the world's earliest civilizations. 69 The Bible, the Rig Vedas, the Iliad, the Odyssey, and Herodotus' History all mention the use of herbs to treat various maladies. 70 6000 years ago, the ancient Chinese used medicinal plants. 71 The Materia Medica of the Babylonians, Egyptians, Greeks, Romans, and Sumerians each had a distinctive style. The Aztecs, Mayans, and Incas had created crude remedies on the other side of the globe.

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