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PHYTOCHEMICAL AND PHARMACOGNOSTIC EVALUATION SCREENING OF HERBAL PLANTS OF MOMORDICA CHARANTIA AND SPONDIS MOMBIN

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ABSTRACT

The present study was designed to analyze the various phytoconstituents present in different extracts of *Momordica Charantia* and *Sponias Mombin*. Extracts of *Momordica Charantia* and *Sponias Mombin* were prepared in different solvents *viz.* methanol, chloroform, petroleum ether, di-ethyl ether and water. The screening was performed for alkaloids, anthraquinones, flavonoids, saponins, tannins, and glycosides. The color intensity or the precipitate formation was used as analytical responses to these tests. The phytochemical tests revealed the presence of alkaloids, glycosides, flavonoids, tannins, saponins, carbohydrates, fixed oils and fats. The phytochemical characteristics of the seed extracts of *Momordica Charantia & Spondias Mombin* investigated are summarized in above. The results reveal the presence of medicinally active constituents like tannins, alkaloid and saponins in the *Momordica Charantia & Spondias Mombin.*

KEYWORDS: *Momordica Charantia*, *Sponias Mombin*, alkaloids, flavonoids, tannins, glycosides.

INTRODUCTION

Herbal medicine represents one of the most important fields of traditional medicine. WHO recognized that medicinal plants played an important role in the health care of about 80% of the world population in developing countries and depend largely on traditional medicine.[1] It isestimated that about 75% of the 120 biologicallyactive plant derived compounds, presently in theuse worldwide, have been derived through follow up researches to verify the authenticity ofthe data from folk and ethno-medicinal uses. So,there is a great scope for new drug discoveries based on traditional plant uses.[2-4] Phyto- chemical studies have attracted the attention of plant scientist due to development of new and sophisticated techniques.

HERBAL PLANTS

The practise of herbal medicine was the earliest kind of healthcare ever utilised by humans. Herbs have been used by all cultures throughout history. It made an important contribution to the development of contemporary civilization. They carefully compiled information on plants before producing concise herbal pharmacopoeias. In reality, the pharmacopoeia of scientific medicine, which goes back to the early 20th century, depends heavily on the herbal knowledge of the people living there. Today's most widely used medications often have a botanical basis.[1]

According to estimates from the World Health Organization, herbal medicine is currently used by nearly four billion individuals, or 80% The human population of the globe, for some part of rural healthcare. Medicines made from herbs are an integral element of the traditional therapies used in Ayurvedic, Homoeopathic, Naturopathic, Ancient Oriental, and Native American Indian medicine. Around the world, between 70 and 90 percent of people utilise complementary and alternative medicine. Herbs have been used in conventional medical practises since the dawn of mankind. The early man discovered herbs by experimentation and failure, and he taught his progeny about them. It is conceivable that plants have been used for both medicinal and magical purposes for ten thousand years.[2]

India holds the unenviable title of "Diabetes capital of the world" for having the highest proportion of diabetes patients in the world. If immediate preventative action is not done, the Diabetes Atlas 2006, a publication of the International Diabetes Federation, predicts that India's present 40.9 million-strong diabetes population would increase to 69.9 million by 2025. The American Diabetes Association (ADA) requirements for determining the presence of DM include signs (such as polyuria, polydipsia, and unexplained weight loss) and a blood sugar level greater than 200 mg/dL (11.1 mM) at random, more than 126 mg/dL (7mM) at fasting, or

greater than 200 mg/dL (11 mM) at least two hours after ingesting an oral glucose load. The Indian Council of Medical Research has lately named type 2 diabetes as one of the chronic diseases that for which the present-day allopathic healthcare system cannot provide a satisfying cure and for which appropriate alternative therapies need to be researched. With reference of around 45,000 species, India has a long history of using medicinal herbs in its Ayurvedic, Siddha, and Unani systems of medicines. Over the past few decades, a great deal of plant preparations have been claimed to have hypoglycemic action. 800 plants were mentioned in a database that contains natural hypoglycemic substances compiled by Mexican scientists. Over 150 plants belonging to different plant groups having hypoglycemic action have been used, according to Indian researchers. Over 1,200 medicinal plants are included in a recent cross-cultural compendium as being utilised in diabetes. In India, there are over 6000 producers of herbal products. Ayurvedic medications are produced in over 4000 sites.[3]

Ethanopharmacological Significance

Naturally botanicals constitute some of the oldest known medicinal remedies, having been used for millennia by people all over the world. They play a significant role in several countries' conventional medical formulas. In addition to having uses as nutraceuticals, cosmetics, herbal tea, and other medical products, there has been a significant increase in curiosity concerning the study of plants for medicinal purposes, especially in India.[4] The majority of the plants that are that are currently employed to treat diabetes have their roots in medicinal plants, and conventional medicine and ethnobotany are both excellent sources of information on the efficacy and pharmacological impacts of medicinal plants.[5]

PLANT PROFILE

Momordica charantia

M. Comordica charantia, often referred to as bitter melon, bitter pear, or karela, is a tropical herbal plant that be popular in Indian cuisine and has a long history of usage in conventional medicine as a treatment for hyperglycemia. Momordica is a Latin word that meaning "to bite" in reference to the leaf's jagged edges, which resemble bite marks. The fruit is regarded as tonic, stomachic, stimulant, emetic, antibilious, bowel movements, and alterative in Ayurveda. For an extended period of time, bitter melon has been utilised in several Asian traditional medical practises. Like other meals with a bitter flavour, bitter melon encourages metabolism. While this can be beneficial for persons with problems with stool, dyspepsia, and slow digestion, it can occasionally aggravate indigestion and ulceration. However, according to scientific research and conventional accounts, bitter melon seldom does have these adverse effects because it is both a demulcent and at least modest inflammatory modulator. MC is a blooming plant in the the cucumber family, sometimes known as bitter melon or bitter guard.[6]

Scientific classification of *Momordica charantia*-

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Clade	Rosids
Order	Cucurbitals
Family	Cucurbitaceae
Genus	Momordica
Species	M. charantia

Botanical Description

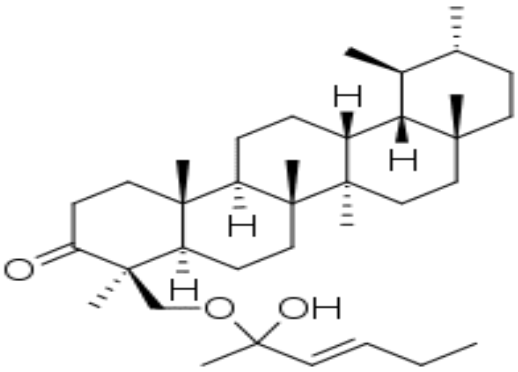
In addition to the fact that it is a resident of the tropical regions, the organism's ancestral habitat is unknown. Tropical regions such as the Amazon, eastern Africa, Asia, and the Caribbean all support the growth of bitter melon. It is cultivated extensively throughout the Indian subcontinent, including in India, as well as in China, Southeast Asian countries, the African continent, and the Caribbean. Simple, mostly palmately 5-7 divided leaflets with one or two branches on the tendrils. The 5 m-long, herbaceous, tendril-bearing vine. It has 4–12 cm wide, alternating, simple leaves through 3–7 deeper lobe divisions. Fruits can be ovoid, ellipsoid, or spindle-like frequently warty or ridged, and can dehisce sporadically into a mushy capsules with three valves or remain indehiscent. The interior of the fruit is rectangle in shape and has an outward look that is distinctly warty. It features a hollow segment, a thin layer of flesh covering a vast cavity, and pith in addition to flat, enormous seeds. Unripe fruits contain white pith and kernels, which become red as they mature. The texture of the interior is fluid and crisp, similar to that of a green-colored bell pepper, cucumber, or chayote. It has lovely and sensitive skin. Orange and squishy fruit signals that it is completely ripe. There are many different sizes and forms of bitter melon. The usual Chinese phenotypic is between 20 and 30 cm long, rectangular, sharply tapered at the tip, pale green in colour, and warty on its outermost layer. The bitter melon that serves as the representative of India is thinner, has pointy ends, and has grooves and sharp trapezoidal "teeth" all over its outermost layer. Green or white colouring is prominent. There are several transitional varieties that fall among both of these poles. Some produce little fruit that is just 6 to 10 cm long and can be eaten as stuffed veggies. Both India and Southeast Asia are big fans of these little fruits. Balsamino is the name for bitter melon in Colombia. When mature, the pods are smaller and have scarlet seeds that are quite tasty. blooms are stain blooms, generally solitary on a bracteate scape, with a deep hypanthium, five lobed calyx, five distinctive the petals, generally yellow, and one to three with incised plates at the base, introduced towards the bottom of hypanthium, threads separate, broad, the anthers different or consistent, 2 each one dithecal, the remaining one monothecal, cells in order bent or flexuous; pistillate blossoms typically isolated on a bracteates scape, hypanthium rectangular attached to spindle formed perianth typically lesser compared to stain petals,

staminodes missing or 3, eggs multiple, horizontal, prejudices 3, 2 lobed. Few to many, ovate, and often carved seeds. Yellow male and female flowers are produced separately by each plant. No proof could be found to back up the assertion that quinine is the source of bitterness in bitter melon.

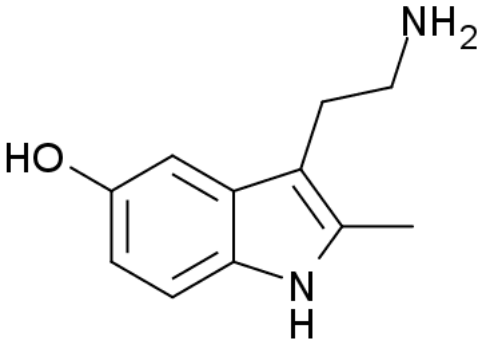
Momordica charantia

Phytochemistry

Alkaloids, also charantin, charine, cryptoxanthin, cucurbitins, cucurbitacins, cucurbitanes, cycloartenols, diosgenin, elaeostearic acids, erythrodiol, galacturonic acids, gentisic acid, goyaglycosides, goyasaponins, guanylatecyclase inhibitors, oleic acid, oxalic acid, pentadecans, peptides, petroselinic acid, polypeptides, proteins, ribosome-inactivating proteins, rosmarinic acid, rubixanthin, spinasterol, steroidal glycosides, stigmasta-diols, stigmasterol, taraxerol, trehalose, trypsin inhibitors, uracil, v-insulin, verba Ascorbigen, aspartic acid, serine, glutamic acid, thycine, alanine, g-amino butyric acid, and pipecolic acid are among the amino acids. lutein, lycopene, pipecolic acid, b-sitosterol-d-glucoside, elasterol, citrulline, and flavochrome.



Momordicilin



Hydroxy tryptamines

Therapeutic Uses

The fruit is regarded as alterative, laxatives that anti bilious, emetic, addictive, tonic water, and stomachic. Gout, arthritis, and acute hepatic and splenic conditions can all benefit from the fruit. It is used to cleanse the blood, remove melancholy, and get rid of foul odours. In both humans and animals trials further shown to possess hypoglycaemic qualities. Types of diseases caused by intestinal parasites and worms include diabetes, malaria, colic, sores and wounds, infections, and hepatitis cirrhosis of the liver. Leaf serves as a galactogogue. An astringent root. Demulcent, dermatosis, diabetes, diarrhoea, indigestion, eczema, emmenagogue, emollient, high body temperature, febrifuge, anthelmintic, aphrodisiac, burn, catarrh, constipation, digestion, haemorrhoids, hepatitis, hypoglycemic, aggravation (liver), filth, leucorrhoea, leukaemia.

Spondiasmombin

The yellow mombin (Spondiasmombin L.), a member of the Anacardiaceae order, may be encountered in tropical parts of Northern and Northeastern Brazil as well as America, Asia, and Africa. In Brazil, it is referred to as cajá or taperebá, in Mexico and Ecuador as ciruelaamarilla, in the region of Central America as jobo, and in North America as hogplum or yellow mombin. Both the coastal region and the rain forest support its growth. It has a height range of 15 to 22 metres. Deep cuts in the bark of the trunk frequently result in the production of a brown resinous material. The tips of the

branches are where the foliage and flowers are located. The majority of the leaves on the tree are stripped off before it begins to bloom. The fruit is an oval in shape, yellow plum that is 1 and half inches long. It has a leather exterior and a thin covering of fruit pulp that has a highly unusual flavour. It hangs from the tree in various groups totaling more than twelve. The berry consists primarily of an oblong bean and is extremely high in vitamins B1 and C. Cuttings taken and seeds are the plant's primary means of proliferation.

Scientific classification of *Spondiasmombin*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Clade	Rosids
Order	Sapindales
Family	Anacardiaceous
Genus	Spondias
Species	S.mombin

Botanical Description

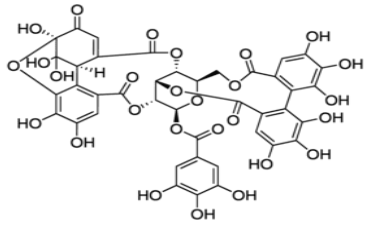
A tree that is typically between medium and big in size with long compound leaves that have between nine and nineteen leaflets on each leaf. The leaves are often alternating, but clustered at the ends of the branches, radiating forth from the branch like spokes of a wheel. With the exception of the final ones, the leaflets are opposite. The leaf stem sometimes becomes crimson towards the outer leaflets, especially on young plants. The fragrance of crushed leaves is somewhat turpentine-like. Grey in colour, the trunk and bark can occasionally have identifiable tiny, blunt, grey spines that resemble warts more commonly than spines (Nelson, 1951). According to Bosco, Soares, AguiarFilho, and Barros (2000), the fruit is a tiny, oval drupe that is 3 to 5 cm length with a lean yellow peel and a tart-sw eet flavour.

Spondiasmombin

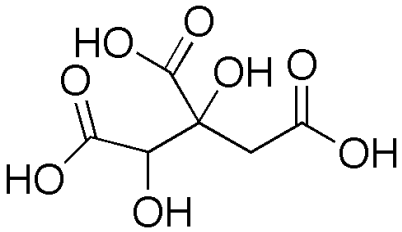
Phytochemistry

HPLC examination of Spondias mombin indicated the occurrence of carotenoids that phytoene, α -trans-beta-carotene, α-carotene, betacrytoxanthin (cis and trans), zeinoxanthin, and lutein, according to Hamano and Marcadante (2001). According to (Leon-De-Pinto et al. 1995), the gum exudates from Spondiasmombin include arabinose, mannsone, and the rhamnose and are hence particularly soluble in water. The ash gums' cationic composition include significant amounts of calcium, potassium, sodium, and magnesium. There is proof that the Spondias gums include arabinofuranose residues as structural elements. They are called galloygeraniin and geraniin. According to Apori (1998), spondiasmombin has a high polyphenol and tannin readily extracted content. According to Caraballo et al. (2004), a variety of substances, including flavonoids, naphthoquinones, sesquiterpenes, quassiniods, indole and and quinoline alkaloids, along with anthraquinones, berberine, and others, may contribute to Spondiasmombin's anti-malarial effect. According to Abo et al. (1999), Spondiasmombin consists of the substances saponins, tannins, and anthraquinone glycosides that have been demonstrated substantial antibacterial action but no such effect against fungi. More than 54 elements that make up of the natural oils of Spondiasmombin were identified by (Moronkola et al. 2003), with caryophyllene being the most prevalent compound, followed by µ-cadinine, α-muurolene, α-gurjunene, 5-isocedranol, and -cadinene. Antiviral Geraniin, Ballyl (Geraniin et al 1991), Chorogenic acid, Butylester, and Allohydroxycitric Acid, (Corthout et al. 1992)

PHYTOCONSTITUENTS



Geranin



Allohydroxy citric acid,

Therapeutic Uses

The fruit's juices is used as a febrifuge and diuretic. The pungent bark's decoction can be used as an emetic, therapy for diarrhoea, diarrhoea, haemorrhoids, gonorrhoea, and leukorrhea, as well as a medicine for dysentery. It is thought to remove bladder calcifications in Mexico. On wounds, the powdered bark is administered. Tea produced from the blossoms and leaves is used to treat ocular and throat pain as well as urinary tract infections, cystitis, and biliousness. A infusion of the young leaves is used as a treatment for diarrhoea and dysentery in Belize. Poultices are applied to wounds and inflammatory conditions using the juice of crushed leaves and the powder of leaves that have been dried. According to Rodrignes and Hesse (2000) and Rodrigne and Samuels (1999), the gum is used as an expectorant and to expel tapeworms. The fruit juice is used as a febrifuge and diuretic medication. The acidic bark's extract can be used as an emetic, therapy for diarrhoea, diarrhoea, haemorrhoids, gonorrhoea, and leukorrhea, as well as a medicine for dysentery. It is thought to remove bladder calcium deposits in Mexico. On injuries, the powdered bark is administered. Tea produced from the blossoms and leaves is used to treat eye and throat discomfort as well as urethritis, cystitis, and biliousness. In Belize, a suspension of the fresh leaves is used as a remedy for diarrhoea. Utilising the juice of chopped leaves and the powder of dried leaves, poultices are applied to wounds and inflammatory conditions. The gum is used as an expectorant and to expel tapeworms, according to (Rodrignes and Hesse (2000) and Rodrigne and Samuels 1999).

MATERIAL AND METHODS

Selection of Plant for Authentification

Momordica charantia and Spondiasmombin were purchased online from Amazon in dried form. For authentication, I made a Herbarium file in which plants part are attached, these were authentified from the BGIR, NOIDA by the Scientist Dr. Priyanka Ingle. The plants were identified as Momordica charantia and Spondias mombin.

Collection of plant material for extraction

After authentication Momordica charantia and Spondiasmombin were collected from the supplier, and checked. The Momordica charantia and Spondiasmomb in were shade dried and powdered with a mechanical grinder then passed through the sieve No. 80 and stored in an air tight container.

Extraction Procedure

Extraction of Spondias mombin: Spondias mombin powdered was determined, and a 7-day maceration procedure using a solvent made from methanol and constant stirring was performed in a conical flask that was kept at the temperature of the room. After the maceration procedure is finished, muslin cloth is used to filter the leaf extract. Next, the extract is dried by rotary evaporation. Up to its next usage, the MESM will be kept at 80°C (Samuggam et al., 2021).

Extraction of *Momordica charantia:* The dried fruit was homogenised during the night while being ground into a fine powder and extracted with water that had been double-distilled (1:3). For additional purification, the resulting solution was passed through filters and centrifuged (3000 x g, 10 mi n). To get M. charantia water-based extract, the supernatant was further lyophilized until completely dry.

PHARMACOGNOSTIC EVALUATION

Morphological and microscopic analysis was performed of the sample.

MORPHOLOGY

Momordica charantia

Straight bole, longitudinal fissured bark, imparipinnate and elliptic leaves, fragrant flowers in dense panicles, and winged, flat pods are characteristics of this species. The tree may grow up to 30 metres tall and 2.5 metres wide. Bark has a rough, scaly, and longitudinally fissured outer layer. Each leaflet is 8 to 13 cm long, oblong, elliptic, or rotund in shape, and has 15 to 20 pairs of transverse veins. There are five to seven leaflets total.

Spondias mombin

Spondias mombin is a tiny, somewhat buttressed evergreen tree that may reach heights of 20 metres (66 feet) and girths of 1.5 metres (4.9 feet). It has thick, corky bark that is severely split. It is light pink when cut, quickly becoming darker. Lower stems have hairless branchlets.

Powder Microscopy

In powder from the aerial portion, a soft, microscopic feature of colour was investigated.

Proximate Analysis

Calculations were made for the powder product's expected moisture level, overall ash worth, acidic and

water-soluble and ash, extract alcoholic compatible values, and extraction soluble in water values.

Moisture Content

The method of drying loss specified in the Indian Ayurveda Pharmacopoeia was used to determine the contents of the powder products sample. From the Petri plate that had previously been weighed, 5 g of the product powder were taken out and baked for 5 hours at 105°C. After cooling down, the Petri plate was measured in a desiccator. It absorbed the weight disparity. After 30 minutes of heating and chilling, the drying and weighing were maintained until a steady weight was achieved.

Ash Value

This is carried out to evaluate the consistency and quality of a synthetic material. Ash is made up of organic radicals like sodium, potassium, magnesium, calcium, etc. as well as inorganic radicals like phosphates and carbonates, and silicates.

Total Ash

A silica crucible dish should be weighed and heated. Only a little amount of the medication, less than 2 g, was incinerated in a compact dish in a muffle furnace at a temperature no more than 450 ° C until it was carbon-free, after cooling, weighed. The burnt material ought to be washed in hot water, the residue collected on an ash-free filter pad, and the residues vaporised if a carbon-free ash cannot be obtained in this manner. Filtrate should be added, followed by a rinse and a flame set at no higher than 450 ° C. With an air-dried product, figure out how much ash is there.

Calculation

Total value of ash of the specimen = $\frac{(Z - X) \times 100\ \%}{Y}$

Where, X= empty dish weight (g)Y= drug weight (g)
Z= dish weight + ash (g)

Acid-Insoluble Ash Values

This is carried out to evaluate the consistency and quality of a synthetic material. Ash is made up of organic radicals like sodium, potassium, magnesium, calcium, etc. as well as inorganic radicals like phosphates and carbonates, and silicates.

Total Ash

A silica crucible dish should be weighed and heated. Only a little amount of the medication, less than 2 g, was incinerated in a compact dish in a muffle furnace at a temperature no more than 450 ° C until it was carbon-free, after cooling, weighed. The burnt material ought to be washed in hot water, the residue collected on an ash-free filter pad, and the residues vaporised if a carbon-free ash cannot be obtained in this manner. Filtrate should be added, followed by a rinse and a flame set at no higher than 450 ° C. With an air-dried product, figure out how much ash is there.

Calculation

Total value of ash of the specimen = $\frac{(Z - X) \times 100\ \%}{Y}$

Where, X= empty dish weight (g)Y= drug weight (g)
Z= dish weight + ash (g)

Acid-Insoluble Ash Values

The ashes gathered from the aforementioned procedure should be boiled for five minutes while the insoluble material is concentrated on ashless filter paper with 25 ml of distilled hydrochloric acid, washed with hot water, and ignited to continual heat. Determine how much acid-insoluble ash there is relative to the dry medicinal product.

Calculation

value of ash insoluble in acid of the specimen = $\frac{100 \times A\ \%}{Y}$

Where, A= residue weight (g)Y= drug weight (g)
Ash insoluble in acid is often less than Total ash content of the same material.

Water-Soluble Ash Values

Heat the ashes in 25 ml of water for five minutes, subsequently store he undissolved material on ashless filter paper and place it in the water that is boiling. Finally, burn the mixture at a temperature no more than 450 ° C for 15 minutes.

Calculation:

value of the ash soluble in water of the specimen = $\frac{100 \times A\ \%}{Y}$

Where, A= residue weight (g) Y= drug weight (g)

Extractive Value

The extractive values have been crucial in determining the quality of the raw material and providing evidence of the phytochemical ingredients included in a medicinal substance. This was helpful in evaluating certain elements because they could be evaluated using the same extracting solvent.

Alcohol-Soluble extractive value

A closed flask was used for the maceration and finely grind 5 g of the air-dried product with 100 ml of the recommended strength alcohol throughout the course of 24 hours, shaking it once every six hours and letting it sit for 18 hours. Filter readily, take pains to prevent solvent loss, and reduce 25 ml of the filtrate to drying in a weighted flat-bottomed deep dish before drying it at 105 ° C to a consistent weight. Furthermore to the dried medication, estimate the extraction value of the alcohol.

Calculation

25 ml of alcoholic extract gives = x g of residue 100 ml of alcoholic extract gives = 4 x g of residue 5 g of air-dried drugs gives – 4x g of alcohol soluble residue 100 g of air-dried drugs gives – 80x g of alcohol soluble

residue Extractive value soluble in alcohol of the sample = 80x %

Determination of Water-Soluble Extractive Value

A closed flask was used for the maceration and finely grind 5 g of the air-dried product with 100 ml of the recommended strength alcohol throughout the course of 24 hours, shaking it once every six hours and letting it sit for 18 hours. Filter readily, take pains to prevent solvent loss, and reduce 25 ml of the filtrate to drying in a weighted flat-bottomed deep dish before drying it at 105 ° C to a consistent weight. Furthermore to the dried medication, estimate the extraction value of the alcohol.

Calculation

25 ml of water extract gives = x g of residue 100 ml of water extract gives = 4 x g of residue 5 g of air-dried drugs gives – 4x g of water-soluble residue 100 g of air-dried drugs gives – 80x g of water-soluble residue extractive value soluble in water of the specimen = 80x %

Phytochemical investigation

1. Phytochemical investigation of *Momordica charantia*

The primary types of chemical components included in the extracts some are as follow glycosides, alkaloids, tannins, saponins, terpenoids, carbohydrates, cardiac glycosides, , flavonoids, and phenols were identified using the colour reactions.[29]

2. Phytochemical investigation of *Spondiasmombin*

The active ingredients in extracts, such as steroid, tannins, phenols, flavonoids, alkaloids, cardiac glycoside, triterpinoids, carbohydrates, proteins, and Quinones, were checked using standard procedures.[30, 31]

Preliminary Phytochemical Screening of *Momordica charantia*

The observed finished product was subjected to an excellent phytochemical screening procedure in order to identify the key chemical categories (glycosides, alkaloids, tannins, saponins,, cardiac glycosides, anthraquinones glycosides, flavonoids, and phenols) present in plant extracts.[29]

Detection of Alkaloids

Mayer's Test and Dragendroffs's test

The resulting substance was heated and screened following the addition of 10 ml of acidified alcohol to 0.1 g. The following step included combining and carefully shaking 0.4 ml of diluted ammonia, 1 ml of chloroform, and 1 ml of filtrate. The specimen's chloroform layer was removed with the use of 2 cc of acetic acid. Dragendroff's reagent (potassium bismuth iodide solution) was administered to one side, while Mayer's reagent (potassium mercuric iodide test) was administered to the other. When an alkaloid test is positive (using Mayer's or Dragendroff's reagents, respectively), a cream or a reddish-brown precipitate is created.[29]

Detection of Glycosides

After heating or steaming on a vessel filled with water, 0.2 g of the test sample was extracted using 5 ml of each diluted sulfuric acid and water. After passing the acid extracted over filters, it was neutralised with a 5% solution of sodium hydroxide. The water extract received the same amount of water that was used to dilute the sodium hydroxide in the case of the acid extract. After being mixed to make both Fehling's solutions A and B alkaline, the mixture was heated in a water bath for two minutes. There may be glycoside present if the acid extract produces more red precipitation than the water extract.[29]

Detection of tannins

Two millilitres of water/dimethyl sulfoxide (DMSO) was heated with 0.1 grammes of the extract, and a few droplets of ferric chloride solution at 0.1 percent were added. The coloration was next checked for blue-black or brownish-green tones.[29]

Detection of saponins

The maximum amount of three drops of olive oil that have been added to a foam created by mixing 0.1 g of extract with 1 ml of distillation-derived water results in the formation of an emulsion, proving the presence of saponins.[29]

Detection of triterpenoids

Salkowski's test

A reddish brown hue appeared at the interface when strong sulfuric acid and 0.4 ml chloroform were added to 0.1 g of the extract, suggesting an abundance of terpenoids.[29]

Detection of Proteins

The appearance of a violet colour after adding 2 ml of biuret reagent to the test solution (2 ml) indicates the existence of proteins.[29]

Detection of flavonoid

Shinoda test

The detection of flavonoids was adding a few magnesium turnings and adding intense hydrochloric acid droplet until a few pink scarlet, crimson red, or occasionally green to blue hues appeared.[29]

Detection of Phenol

Whenever 50 mg of the extraction were diluted in 5 ml of distilled water, the appearance of a dark green colour with the addition of just a few droplets of a neutral 5 percent ferric chloride solution was regarded as an indication for phenolic components.[29]

Test for carbohydrates

Molisch's test

When Molisch's reagent (-naphthol dissolved in ethanol) with herbal drug, accompanied by just a few droplets of

strong sulfuric acid, a purple ring manifests at the interface between the test material and the acid, indicating the presence of carbohydrates.[29]

Preliminary Phytochemical Screening of *Spondias mombin*

The preliminary phytochemical examination was used to evaluate the existence of compounds including alkaloids, flavonoids, saponins, tannins, phenols, proteins, glycosides, terpenoids, and carbohydrates. employing the methods outlined below.[31]

Detection of Alkaloids

Mayer's Test: (Potassium mercuric iodide test)-

The resulting solution was put into a test tubes in 1.2 ml volume. 0.2 cc of diluted hydrochloric acid and Mayer's reagent were applied. An alkaloid is present when a yellow-buff tinted precipitation forms.[32]

Dragendroffs's test: (Potassium bismuth iodide solution)-

Dragendroff's reagents and 0.1 ml of diluted hydrochloric acid were added to a test tubes containing a 2 ml solution of extract. By forming an orange-brown coloured precipitate, an alkaloid's existence was demonstrated.[32]

Detection of Glycosides

Legal test

The substance being extracted was dissolved in pyridine, and the resulting solution was then made alkaline by adding sodium nitroprusside solution. Pink red was the result.[32]

Detection of tannins

Ferric chloride test

5 ml of the extracted solution were combined with 1 ml of a 5 percent ferric chloride solutions. The greenish black hue served as a clue that tannins were present.[32]

Potassium dichromate test

5 ml of the extracted were combined with 1 ml of a 10% aqueous potassium dichromate preparation. The production of a brownish brown precipitate indicated the presence of tannins.[32]

Detection of saponins

Foam test

Distilled water was used to reduce a 1 ml extract solution to 20 ml, and the mixture was then stirred for 15 minutes in a graduated cylinder. The emergence of solid foam hinted at the presence of saponins.[32]

Detection of triterpenoids

Nollar's test

The test solution was added to the test tube together with 2 ml of a thionyl chloride solution containing anhydrous stannous chloride at a concentration of 0.01 percent. Triterpenoids are present when a deep crimson hue transforms from purple to deep red after a few minutes.[32]

Detection of Protein and Amino Acids

Ninhydrin test

The test sample containing the extract was given ninhydrin (tri-ketohydrindene hydrate) treatment at a pH range 4 to 8. Amino acids appeared to have a positive impact on the formation of purple hue.[32]

Detection of flavonoid

Shinoda test

The resulting substance was coloured red by adding magnesium turnings and conc. hydrochloric acid (HCl) to it.[32]

Detection of Phytosterols

Libermann-Burchard Test

10 mg of the herbal drug dose was mixed in 1 ml of chloroform. No reddish violet colour appeared despite the addition of 1 ml of acetic anhydride and 2 ml of strong sulphuric acid, indicating the lack of steroids.[32]

RESULT AND DISCUSSION

PHARMACOGNOSTICAL EVALUATION

Momordica charantia has undergone evaluation. The computed average is shown below in the table along with the results, which are 5.1, 5.2, and 5.3. Three repeats of every evaluation were run in order to determine the final outcome.

Ash Value

Momordica charantia was found to have an overall ash value of 6.5%w/w. Momordica charantia was found to have an acid in soluble ash value of 0.29% w/w and a water-soluble ash value of 3.50% w/w, as shown in Figure 5.1.

Table 5.1: Ash value of powdered of *Momordica charantia.*

Name of the Plant	Ash value % (w/w)		
	Total	Acid in soluble	Water soluble
Momordica charantia	6.5% w/w	0.29%w/w	3.50% w/w

Moisture content

Momordica charantia's moisture percentage was measured and determined to be 3.21 % w/w as shown in figure 5.2.

Table 5.2: Moisture content of powdered of *Momordica charantia.*

Name of the Plant	Wt. of dry Herb (GM)	%moisture content
Momordica charantia	10	3.24

EXTRACTIVE VALUE

The medicinal plant Momordica charantia was discovered to have a 36.7% (w/w) soluble in water extracting value and a 19.4% (w/w) alcohol-soluble extraction values.

Table 5.3: Extractive value of powdered of Momordica charantia.

Extract	Plant powder taken	Yield% (w/w)
WATER	**100gm**	**36.7**
ALCOHOL	100GM	**19.4**

QUALITATIVECHEMICALEXAMINATIONEXTRACT

The extracted was put through qualitative chemical analysis in order to identify the chemical elements that were present, as given in table 5.4. The aq included alkaloids, flavonoids, saponins, glycosides, proteins, amino acid carbohydrates, phenolic and tannins. Momordica charantia extract.

Table 5.4: Phytochemical examination of *Momordica charantia* extract.

S.No.	Tests	Aqueous extract
1	**Test for Alkaloids**	
ABCD	Mayer's test Dragen dorff's test Wagner's test Hager's test	+ + + +
2	**Test for Glycosides**	
A**BC**	**Modified Borntrager's Test** **Baljet's Test Keller-Killiani Test** Legal'stest	+ + +
3	**Test for Carbohydrates**	
ABC	Molisch's test Benedi ct's TestFehling'sTest Killer-killiani Test	+ + +
4	**Test for Flavonoids**	
ABC D	Shinoda test Alkaline reagent test Ammonium test Aluminium chloride test	+ + + +
5	**Detection of Proteins and Amino acid**	
	Millons test Ninhydrin test Xanthoproteic test	+ + +
6	**Test for Saponins**	
A	Frothing test	+
7	**Detection of Phenolic Compounds and Tannins**	
ABC D	Lead sub-acetate test Ferric chloride test Gelatin Test Shinoda Test	+ + + +
8	**Detection for Phytosterols**	
A B	Salkowski's test Libermann- Burchard's test	+ +

SPONDIAS MOMBIN

Mombin Spondia has been evaluated. Calculating the median number yielded the results listed in the table below, which are 5.5, 5.6, and 5.7. Three repeats of each test were run in order to determine the result.

Ash Value

Spondias mombin was discovered to have a total ash

value of 7.17%(w/w). According to figure 5.1, Spondias mombin's water-soluble ash values has been determined to be 5.19% (w/w) and its acid-insoluble ash value was determined to be 3.12% (w/w).

Table 5.5: Ash value of powdered of *Spondias mombin*.

Name of the Plant	Ash value % (w/w)		
	Total	Acid in soluble	Water soluble
Spondias mombin	7.17%(w/w)	3.12%(w/w)	5.19% (w/w)

Moisture content

Spondias mombin's percentage of moisture was measured with the result to be 9.48, as shown in figure 5.6.

Table 5.6: Moisture content of powdered of *Spondias mombin*.

Name of the Plant	Wt. of dry Herb (GM)	%moisture content
Spondias mombin	10	9.48

Extractive value

The extractive value of the herbal drugs Spondias mombin in ethanol has been determined to be 17.82% (w/w), its extractive value in petroleum ether was found to be 1.95% (w/w), and its extraction value in water was determined to be 16.50% (w/w).

Table 5.7: Extractive value of powdered of Spondias mombin.

Extract	Plant powder taken	Yield% (w/w)
Water	**10gm**	**16.50**
Ethanol	10gm	**17.82**
Petroleum Ether	10gm	**1.95**

QUALITATIVE CHEMICAL EXAMINATION EXTRACT

The extract that was produced was put through qualitative chemical analysis in order to identify the chemical elements that were present, as indicated in table 5.4 The methenolic extract of Spondias mombin was shown to include Alkaloids, Flavonoids, Saponins, Glycosides, Proteins and Amino Acid Carbohydrates, Phenolic Components, and Tannins.

Table 5.4: Phytochemical examination of *Spondias mombin*extract.

S.No.	Tests	Methenolic extract
1	**Test for Alkaloids**	
ABCD	Mayer's test Dragendorff's test Wagner's test Hager's test	+ + + +
2	**Test for Glycosides**	
A**BC**	**Modified Borntrager's Test** **Baljet's Test Keller-Killiani Test** Legal'stst	+ + +
3	**Test for Carbohydrates**	
ABC	Molisch's test Benedict's TestFehling'sTest Killer-killiani Test	+ + +
4	**Test for Flavonoids**	
ABC D	Shinoda test Alkaline reagent test Ammonium test Aluminium chloride test	+ + + +
5	**Detection of Proteins and Amino acid**	
	Millons test Ninhydrin test	+ +
6	**Test for Saponins**	
A	Frothing test	+
7	**Detection of Phenolic compounds and Tannins**	

ABC D	Lead sub-acetate test Ferric chloride test Gelatin Test	+ + + +

CONCLUSION

The results confirm the presence of constituents which are known to exhibit medicinal as well as physiological activities. The phytochemical characteristics of the seed extracts of *MOMORDICA CHARANTIA* AND *SPONDIAS MOMBIN* investigated are summarized in above. The results reveal the presence of medicinally active constituents like tannins, alkaloid and saponins in the *MOMORDICA CHARANTIA* AND *SPONDIAS MOMBIN*.

The investigation carried out by us led to certainfindings about the phytochemical features which no doubt can be proved beneficial and serve as scientific background for further isolation steps to obtain the lead compound.

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