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Original Article

Study on Effect of Coversion of Murrayakoinigii Into Solid Dosage Form

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ABSTRACT

Murraya koenigii has been widely used as medicine in indigenous system of medicine. It is multifunction uses such as stomachic carminative febrifuge analgesics dysentery skin eruption. Keeping the various important properties of this plant in mind, the present. Study has been planned to formulate the herbal formulation in different solid dosage forms using the leaves and extract of leaves. Then the assessment of the effect of conversion of the formulations was done. Pharmacognostical, phytochemical studies of Murraya koenigii leaves were done. The microscopical character of leaves was perceived as the identification of plants. The physicochemical parameter such as total ash value, water-soluble ash value, acid insoluble ash value, methanol soluble extractive value, water-soluble extractive value, moisture content, foaming index of leaves was studied. The results of pharmacognostical and physiochemical can be also used for the standardization of Murraya koenigii leaves. Extraction has been done by different methods like maceration or decoction. Then the preparation of solid dosage forms was done using crude leaves and extracts. The evaluation of tablets has been done. Further other activity of the formulation has been done.

Key Words: *Murrayakoinigii; Solid Dosage*

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INTRODUCTION

Natural products from plant, animal and minerals have been the basis used for treatment of human disease. Almost 80 % of peoplein developing countries still relays on traditional medicine based largely on species of plants and animals for their primary health care. People are more satisfied on herbal products due to their fewer side effects. Herbal medicines are currently in demand increase and their popularity is increasing day by day .About 500 plants with medicinal use are mentioned in ancient literature and around 800 plants have been used in indigenous systems of medicine. India is a vast repository of medicinal plants that are used in traditional medical treatments. The various indigenous systems such as Siddha, Ayurveda, Unani and Allopath use several plant species to treat different ailments. The use of herbal medicine becoming popular due to toxicity and side effects of allopathic medicines. Sudden increase in the number of herbal drug manufactures.. Herbal medicines as the major remedy in traditional system of medicine have been used in medical practices since antiquity.[1] The World Health Organization (WHO) has recently defined traditional medicine (including herbal drugs) as comprising therapeutic practices that have been in existence, often for hundreds of years, before the development and spread of modern medicine and are still in use today. Or say, traditional medicine is the synthesis of therapeutic experience of generations of practicing physicians of indigenous systems of medicine. Herbal Medicine Scenario in India The turnover of herbal medicines in India as over-the-counter products, ethical and classical formulations and home remedies of Ayurveda,Unani and Siddha systems of medicine is about $ 1 billion with a meagre export of about $ 80 million. *Psyllium* seeds and husk, castoroil and opium extract alone account for 60% of the exports. Three of the 10 most widely selling herbal medicines in developed countries, namely preparation of *Allium sativum, Aloe barbadensis* and *Panax* species are available in India is one of the 12 mega biodiversity centers having over 45,000 plant species. Its diversity is unmatched due to the presence of 16 different agro climatic zones, 10 vegetative zones and 15 biotic provinces. The country has 15,000–18,000 flowering plants, 23,000 fungi, 2500 algae, 1600 lichens, 1800 bryophytes and 30 million microorganisms. The names of medicinal plants exported and imported in India, respectively Botanical Name Part of the Plant *Zingiber officinale* Rhizome *Rauvolfia serpentina* Root *Swertia chirayita* Whole plant *Cassia angustifolia* Leaf & pod Acorus calamus Rhizome Adhatoda vasica Whole plant Aconitum species Root *Picrorhiza kurroa* Root *Colchicum luteum* Rhizome & Seed Rheum *emodi* Rhizome.[2] *Murraya koenigii* commonly called as Meethi neem, it is an aromatic shrubs more or less deciduous shrub or a small tree up to 6 m in height found throughout India up to an altitude of 1500 m cultivated for its aromatic leaves. It is used as antiemetic, antidiarrhoeal, dysentery, febrifuge, blood purifier, tonic, stomachic used as traditional medicines system, and due to flavoring agent in curries used as chutneys. *Murraya koenigii* oil is used externally for bruises, eruption, in soap and perfume industry. [3]*Murraya koenigii* family belong to Rutaceae , commonly known as “curry leaves” are widely used as a condiment and

spice flavoring agents in India and other tropical countries. With potential medicinal properties *Murraya koenigii* is one of the plants. Cure many human aliments by whole plants or different part of plants. The ethno botanical profile of Murraya koenigii reveals that the whole plant is used as stomachic, febrifuge, anti-periodic and to cure diabetes mellitus, kidney pain and vomiting .different part of plants shows different action such as Stem is used as datum for cleaning, strengthen gums and teeth and also bark shows properties. Bark is used as hair tonic, stomachic and carminative .Leaves are used as stomachic, purgative, febrifuge, anti-helminthes , anti-anemic, memory enhancer, losing weight, maintaining the natural skin pigmentation and showed skin lightening and rough skin improving effect, hypoglycemic activity . Fruits used as astringent. Roots reduce inflammation and itching. More over *Murraya koenigii* is a rich source of various drugs pharmacognostic standardization is essential for the proper identificationof the plant. Pharmacognostical studies can serve as an important source of information to ascertain the identity and to determine the quality and purity.[4]Herbal and natural products of folk medicine have been used for centuries in every culture throughout the world. This are highly demanded due to their fewer toxicity and therapeutic action .Scientist and medical professionals shown increased interest they recognize true health benefits of these remedies. Let food be your medicine and let medicines be your food .plants are the most important source of medicines. Medicinals plants are in secondary metabolites and having essential oil of therapeutic action. The important claimed for therapeutic action of medicinal plants is safety effective and easy availability .Curry leaves Murraya koenigii is an important leafy vegetable .its widely used Indian cookery for flavoring properties. Curry leaves used in various others unani and ayurvedic prescription .The plants are originated in tarai region of Uttar Pradesh India and cultivated in china, Burma. By the seeds crops are propagated .curry leaves having volatile oil curry leaves oils using in soap industries.[5]

Plant description

Fig.1 Curry leaves

Usually hairy-petiole leaves range from 10-45 cm or more in length and are composed of 9 to 25 alternate, short stemmed, light green leaflets. Leaves are symmetrical, elliptic, ovate, lanceolate or somewhat rhomboid, blunt-pointed and minutely toothed, 2.5 to 5 cm long, 1 to 2.5 cm wide; finely hairy on the underside and strongly, muskily aromatic of distinctive bitter acid flavor. Flowers borne on broad, hairy stalked, erect, corymbose panicles, are regular, bi-sexual, white, sweetly fragrant, sepals 5, small neatly distinct, triangular, sub acute, pubescent. Fruits are ovoid or nearly round A pretty, aromatic more or less deciduous shrub or a small tree, up to6 m in height and 15-40 cm in diameter. The wood is hard, close-grained, pale yellowish-brown and durable. Leaves are compound, alternate, with a small point at the apex; thin skinned; turn from green to red and finally black when ripe and contain mucilaginous pulp around 1 or 2 small white seeds.[6]

Geographical condition

Murraya koenigii originates from Srilanka Pakistan and India east to china .In south east Asia it is widely cultivated and some parts ofunited states and Australia.

Cultivation and collection

Flowering starts from the middle of April and ends in middle of May the fruiting season in middle of July to end of august Curry leaves are native to India large shrubs to small tree .pinnate leaves are used in south Indians curries and also in other part ofIndia mostly use.

Fig .2 Curry leaves (*Murraya koenigii*)

Plants profile of *Murraya koenigii*

Table 1. *Murraya koenigii [7]*

Biological name	Murraya koenigii
Common name	Curry leaf
Kingdom	Plantae
Class	Magnoliopsida
Order	Sapindales
Family	Rutaceae
Genus	Murraya j.
Species	Murraya koenigii (L.)

Fig.3(Murraya koenigii)

MATERIAL AND METHOD

✓ **Materials:-**

The plant specimens for the study were collected from medicinal garden Bit Mesra Ranchi. It was identified and authenticated by Professor Dr. S..Jha, Sir B.I.T Mesra. The samples collected were dried under the sunlight.

✓ **Method:-**

Fresh leaves were collected and dried under shade for 10 days and were powdered using mechanical grinder. The powdered isuse for further analysis .The plant was morphologically examined for shape of leaves, base margin The powdered drug was treated with iodine solution for examine starch grains. The powdered drug was treated with

phloroglucinol - HCL solution glycerin to determine the lignified cells calcium oxalates crystals.

❖ **Physicochemical evaluation:-**

Determination of ash value:-Ash value helps to determining the quality and purity of a crude drug especially in the powdered form .The objective isremoving the traces of organic matter

Determination of total ash value:-Accurately 3 gm of air dried drug leaf of *Murraya koenigii* weighed in tarred silica crucible and incinerated at a temperature not exceeding 450° C until free carbon cooled and weighed and then percentage of total ash with reference to air dried powdered drug was calculated.

Acid insoluble ash value:- The ash obtained of total ash was boiled with 25 ml HCL for 5 minutes .the residue was collected on ashless filter paper washed with hot water ignited cooled and weighed. The percentage of acid insoluble ash with reference to the air dried drug was calculated.

Water soluble ash value:-The total ash obtained was boiled with 25 ml of distilled water for 5 minutes .The insoluble matter was collected on ash less filter paper washed with hot water and ignited to constant weight of allow temperature. The weight of insoluble matter was subtracted from the weight of total ash. The difference in weight represents the water soluble ash. The percentage of water soluble ash with reference to the air dried drug was calculated.

Moisture content:-The powdered drug sample 3 g was placed on petridish and dried at 105° C for 4-5 hand weighed .The drying was continued until two successive readings matched each other or the difference between two successive weighing,

Foreign matter:-100g plant material was spread in a thin layer and the foreign matter was sorted into groups by visual inspection and using hand lens. The reminder of the sample sifted through a no 250. Sieve dust was regarded as admixture the sorted foreign material weighed the content of each group was calculated in grams per 100 g of air dried sample.

Foaming index:-About 1 gram powdered drug was transferred into conical flak containing 100 ml of boiling water decoction was prepared and filtered. The decoction was poured into 10 stoppered test tubes in successive portion 1ml , 2ml, 3ml upto 10ml and volume adjust upto 10ml with water the test tube shaken length wise motion for 15 seconds and allow to stand for 15 minutes and height of foam was measured.

Determination of extractive value:- Determination of extractive value is useful for evaluation of crude drug .itis give idea about nature of chemical constituents present in crude drugs.

Methanol extractive value:- Macerated 5g accurately weighed coarse powder drug in 100ml of methanol in stoppered flask for 24 hrs frequently shaking for between 6hr.filtered rapidly through filter paper without excessive loss evaporate 25ml of water extract in water bath dry it and weigh in tare dish calculate the percentage of methanol soluble extractive value.

Water extractive value:-Macerated 5g accurately weighed coarse powder drug in 100ml of water in stoppered flask for 24 hrs frequently shaking for between 6hr.filtered rapidly through filter paper without excessive loss .evaporate 25ml of water extract in water bath dry it and weigh in tare dish calculate the percentage of water solubleextractive value.[08]

Phytochemical evaluation

The preliminary phytochemical screening of petroleum ether extract, ethyl acetate extract, chloroform extract, ethanol extract and aqueous extract was performed. The presence of alkaloids, Flavonoids, carbohydrates, and sterol in various extracts were observed 15 for the confirmation of the phyto constituents in the plant extract, various numbers of tests were performed. Test for alkaloids was confirmed by using Mayer's reagent, upon which addition to petroleum ether, chloroform, ethyl acetate, alcohol and water extracts separately showed formation of white or cream colored precipitates. Phenolic compounds were confirmed by formation of white precipitate upon addition of few drops of 5% lead acetate solution to alcoholic extracts of root. Yellow coloration of filter paper upon dipping in ammoniated alcoholic and aqueous extract indicated the presence of Flavonoids [09]

Fluorescence study:- It is used to standardization of crude drugs. The crude drugs was subjected to study and its fluorescence pattern was noted the powdered material was treated with separately with different reagents and exposedto visible, UV light to study their fluorescence behavior.[10]

Wet granulation:- The wet granulation technique was selected to prepare the granules the ingredients were weighed as per the requirement. The *Murraya koenigii* powder and starch placed in clean dry motor and milled by hand added

sufficient amount of binder and mixed it with finger until mixture convert into coherent mass. The coherent mass sieve with sieve no .#12 to get wet granules later dried in hot air oven at 60 degree the dried granules obtained and weighed. Granules and fines are separated sieve no.#16after that adding talc and magnesium stearate. [11]

Characterization of granules:-

✓ **Bulk density:-**

About 30 g of the sample of the granules were placed in a 100 ml measuring cylinder. The volume occupied by the sample wasnoted as the bulk volume. The bulk density (ℓB) was obtained by dividing the mass of the sample weighed out by the bulk volume, as shown as **Bulk density = Mass of powder (M)/ Bulk volume of powder (VB)**

✓ **Tapped density:-**

The cylinder was tapped on a wooden platform by dropping the cylinder from a height of one inch at 2 s interval until there was no change in volume reduction. The volume occupied by the sample was then recorded as the tapped volume. The tapped density (ℓT) was calculated using the formula: **Tapped density = Mass of powder (M) / Tapped volume of powder (VT)**

✓ **Hausner's ratio:-**

Hausner's ratio = Tapped density / Bulk density

✓ **Carr's index:-**

Carr's compressibility index (%) = Tapped density – Bulk density/ Tapped density× 100

RESULT AND DISCUSSION:-

1. MICROSCOPICAL DETERMINATION:- microscopy of *Murraya koenigii* leaves powder are as shown in figuresunicellular trichomes ,starch ,vascular bundles calcium oxalates are found.

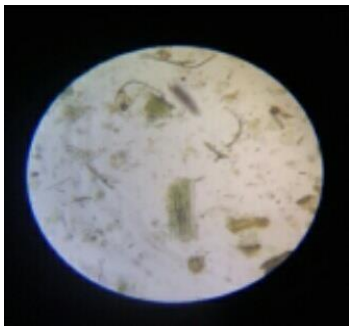

Fig. 4(vascular bundles)

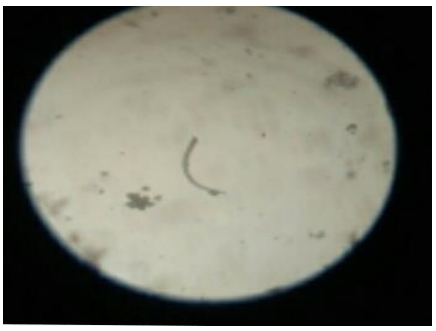

Fig. 5 (unicellular trichomes)

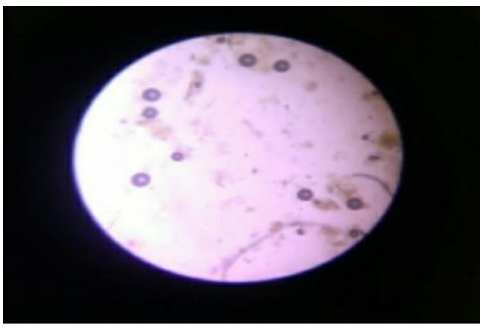

Fig. 6 (starch)

2. PHYSIOCHEMICAL EVALUATION

TOTAL ASH VALUE:-

This method was designed to measure the total amount of material remainingafter ignition .The calculated amount of *Murraya koenigii* leaves total ash value obtained.

Table 2: Total ash value

Parameter	Value obtained on dry weight basis(w/w)
Total ash value	**10%**

WATER SOLUBLE ASH VALUE :-

Water soluble ash value is the difference in weight between the total ash and the residue after treatment of the total ash. The calculated amount of *Murraya koenigii* leaves water soluble ash value obtained.

Table 3: Water soluble ash value

Parameter	Value obtained on dry weight basis(w/w)
Water soluble ash value	**3.84%**

ACID INSOLUBLE ASH VALUE:-

Acid insoluble ash value is the residue after boiling the total ash with dilute HCL and ignite the remaining insoluble matter**.** The calculated amount of *Murraya koenigii* leaves acid insoluble ash value obtained.

Table 4: Acid insoluble ash value

Parameter	Value obtained on dry weight basis(w/w)
Acid insoluble ash value	**0.01%**

- **MOISTURE CONTENT:-**

Moisture content of Murraya koenigii leaves is used to remove excess of water and value found to be

Table 5: Moisture content

Parameter	Value obtained
Moisture content	**10.2%**

FOREIGN MATTER:-

Foreign matter is used to determination of unwanted or waste product present in it. *Murraya koenigii* leaves foreignmatter was found to be

Table 6:Foreign matter

Parameter	Value obtained
Foreign matter	**0.03%**

FOAMING INDEX:-

Foaming index of *Murraya koenigii* leaves was found to be nil in amounts

Table 7: Foaming index

Parameter	Value obtained
Foaming index	**Nil**

EXTRACTIVE MATTER:-

Water soluble extractive value:

This method is used to determine the amount of chemical constituent extracted with water from a given amount ofmedicinal plant.

Table 8: Water soluble extractive value

Parameter	Value obtained
Water soluble extractive	**2.5%**

- **Ethanol soluble extractive value:-**

This method is used to determine the amount of chemical constituent extracted with ethyl alcohol from a givenamount of medicinal plant.

Table 9:Ethanol soluble extractive value-

Parameter	Value obtained
Ethanol soluble extractive	**5.6%**

Phytochemical examination:-

Table 10:phytochemical test

Ethanol soluble extractive	**5.6%**
Qualitative test	**Results**
Carbohydrates	+++
Alkaloids	+++
Flavonoids	++
Tannins	+
Saponins	+
Proteins	+

FLUORESCENCE TEST:-

Table 11: Fluorescence test

TREATMENT	DAY LIGHT	UV LIGHT
Powder CONC. HCL	DARK GREEN	DARK GREEN
Powder CONC.HNO3	ORANGE	DARK GREEN
Powder H2S04	OLIVE GREEN	DARK GREEN
Powder ACETIC ACID	BROWN	BLACK
Powder ETHANOL	GREEN	DARK GREEN
Powder METHANOL	DARK GREEN	DARK GREEN

Micrometric properties of *Murraya koenigii* leaves powder

Table 12: Micrometric properties of *Murraya koenigii* leaves powder

S. No.	Parameter	Murraya koenigii leaves powder
1	Bulk density(g/ml)	0.275±0.03
2	Tapped density(g/ml)	0.33 ±0.01
3	Angle of repose	34.1765±0.5
4	Hausner ratio	1.2±0.01
5	Carr's index	16.6±0.4

Table 13: Micrometric properties of *Murraya koenigii* leaves powder granules using corn starch

S. No.	Parameter	Murraya koenigii leaves powder granules (corn starch)
1	Bulk density(g/ml)	0.375±0.03
2	Tapped density(g/ml)	0.42875±0.04
3	Angle of repose	17.4845±0.05
4	Hausner ratio	1.375±0.01
5	Carr's index	11.75±0.03

Fig 8Murraya koenigii leaves powder granules (Corn starch)

Table 14: Micrometric properties of *Murraya koenigii* leaves powder granules using potato starch.

S. No.	Parameter	Murraya koenigii leaves powder granules (potato starch)
1	Bulk density(g/ml)	0.315±0.03
2	Tapped density(g/ml)	0.357±0.01
3	Angle of repose	23.749±0.04
4	Hausner ratio	1.123±0.01
5	Carr's index	11.564±0.04

Fig,9 Murraya koenigii leaves powder granules (potato starch)

REFERENCES

1. Verma S, Singh SP(2008). Current and future status of herbal medicines. Veterinary world;1(11):347.
2. Agarwal P, Fatima A, Singh PP(1996). Herbal medicine scenario in India and European countries. (10.0):10-0.
3. Ajay S, Rahul S, Sumit G, Paras M, Mishra A, Gaurav A(2011). Comprehensive review: Murraya koenigiiLinn. Asian J Pharm Life Sci; 2231:4423.
4. Aju BY, Rajalakshmi R, Mini S(2018). Pharmacognostical evaluation of curry leaf (Murraya koenigii). Journalof Pharmacognosy and Phytochemistry; 7(6):779-84.
5. Parul S, Javed A, Neha B, Honey J, Anuj B(2012). Curry leaves–A medicinal herb. Asian Journal ofPharmaceutical Research;2(2):51-3.
6. Jayasinha P, Warnasuriya D, Dissanayake H. Murraya koenigii
7. Parul S, Javed A, Neha B, Honey J, Anuj B(2012). Curry leaves–A medicinal herb. Asian Journal ofPharmaceutical Research;2(2):51-3
8. Pal VC, Singh B, Ahamad A(2015). Pharmacognostic evaluation of leaves and stem of Murraya koenigii. UK Journal of Pharmaceutical and Biosciences;3(1):37-41.
9. Handral HK, Pandith A, Shruthi SD(2012). A review on Murraya koenigii: multipotential medicinal plant. Asian Journal of Pharmaceutical and Clinical Research;5 (4):5-14.
10. Shivkanya J, Shilpa P, Sangita K, Neeraj F(2009). Pharmacognostical studies and antibacterial activity of the leaves of Murraya koenigii. Phcog J;1(3):211
11. Sreeshma KK, Chandran CS, Vatakeel B, Vishnu AS. Development and Evaluation of Tablets Containing Powders of Benincasa Hispida and Murraya Koenigii: A Novel Anti-Diabetic Product.
12. Salome AC, Emeka CU, Ikechukwu VO, Brown A, Sinye E, Godswill CO. Formulation and evaluation of Cymbopogon citratus dried leaf-powder tablets. African Journal of Pharmacy and Pharmacology.
13. Sreekala K, Harinarayanan CM, Deepak M, Balachandran I(2016). Pharmacognostic evaluation of simpleeffective healthcare traditions using Murraya koenigii (L.) Spreng for digestion and digestive disorders. Int J Pharmacognosy;3(11):491-95.
14. Jain M, Gilhotra R, Singh RP, Mittal J(2017). Curry leaf (Murraya koenigii): A spice with medicinal property.MOJ Biol Med;2(3):00050.