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PHYSICO & PHYTO – CHEMICAL ANALYSIS OF RASONA PINDA

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ABSTRACT

Rasona pinda is a herbal combination. It is widely used in Ama vata an attempt had been made to investigate the physico & phyto chemical study to extract the Ama vata. **Methods:** Preliminary Physico Phytochemical studies was done using standard procedure with aqueous, chloroform, ethanol, methanol and acetone extracts of Rasona pinda. The different extracts of Rasona pinda were extracted by Soxhlet apparatus (Hot percolation method). **Results:** The results of the test showed that gum and mucilage alkaloids, carbohydrate, flavonoids, tannins, diterpenes, phenols were present and absence of quinine, Saponin. The illness amavata stands number one among the multitude of diseases that are characterized by vedana as the cardinal clinical manifestation. In the presence of mandagni, if one is exposed to nidana then ama is formed in amashaya along with the vitiation of vata dosha.

KEYWORDS: Rasona pinda, physico & phyto chemical study, Ama vata, Rheumatoid arthritis.

INTRODUCTION

Human being is a social living being, and he needs a healthy life throughout his life.on the contrary, disease makes the man to suffer from maladies. Likewise, one such crippling disease is amavata, which makes a person to be dependent on others for his routine activities if untreated. Amavata, according to Ayurveda is rasavahshrothovikara, due to the vitiation of ama and vata dosha.sandhi shoola and sandhi shotha along with the symtoms of ama indicative of amavata The pathology of ama and vata are opposite and care to be taken while treating this disease. Amavata is compared to Rheumatoid Arthritis in modern paralance as pain and swelling in the joints are the clinical findings. Rheumatoid Arthritis is the most common persistent inflammatory arthritis. The clinical course is prolonged with intermittent exacerbations and remissions. Ayurveda gives a lot of importance to Ahara, Vihara, Dinacharya and Ritucharya, the components of swasthavritta, as they play a vital role in maintenance of health. Lifestyle of the present scenario such as junk foods, stress and strain tries the subject to unfollow the rules and regulations mentioned in Ayurvedic classics and to be a victim of disease. One such crippling disorder is Amavata. Indulgence in specific etiological factors, causes simultaneous vitiation of vata dosha as well as kapha dosha which in turn initially afflicting the sacral region; later gradually stiffens the whole body manifesting as amavata[1] and is parallelled to the rheumatoid arthritis of biomedicine. Ama is invariably involved in all stages of pathogenesis hence the name amavata. Vitiated vata dosha in association with ama circulates in the whole body and then localizes in the different locations of kapha dosha with predilection of joints causing pain swelling as well as stiffness of the joints related to extremities head and trunk. The subject may suffer from other systemic features like body ache, lack of taste in the mouth, excessive thirst, lack of enthusiasm, heaviness of the body and febrile illness. Amavata is categorized into three types based on the relative dominance of the dosha as vatanuga, pittanuga and kaphanuga amavata.[2] This crippling disease will make a person dependent on others for his daily needs. Involving the madhyama roga marga, this illness poses difficulties in the curative approach.

AIMS AND OBJECTIVES

To detail study about Phyisco & Phyto-Chemical analysis of Rasona pinda.

MATERIAL AND METHODS

Source of data

1. Classical text books of Ayurveda.
2. Texts books of Modern science
3. Published article from periodical journals and other magazines.

RASONA PINDA[3]

Ingredients: Rasona, Hingu, Jeeraka, Saindhava Lavana, Sauvarchala Lavana, Shunthi, Maricha, Pippali.

Preparation: Sprayed dried garlic powder 3 parts, Hingu(Ghrita bharjita), Jeeraka, Saindhava, Sauvarchala, Shunthi, Maricha, Pippali each 1 parts made into fine powder and 10 gms pinda is prepared and preserved in the air tight container.

RASONA

Synonyms- Lashuna, Ugragandha, yavaneshta
Latin name –Allium sativum Family- Liliaceae
Vernacular Names:
Assam. - Maharu;
Beng. : Lasuna;
Eng. - Garlic;
Guj. -Lasan, Lassun;
Hindi. - Lahasun;
Kan. - Bulluci;
Mal. - Vellulli, Nelluthulli;
Mar. - Lasun;
Punj. - Lasan;
Tam. - Vellaipoondu;
Tel. - Vellulli, Tellapya, Tellagadda;
Urdu. - Lahsan, Seer

Properties

Rasa- Lavana varjita pancha rasa
Guna- Snigdha, Pichila, Guru, Sara, tikshna
Veerya- Ushna
Vipaka- Katu
Karma- balya, chakshushya Pachana, medhya, raktadoshahara, vrishya, varnya Bhagna sandhanakara, Rasayana, jantughna, kanthya, asthi mamsa sandhanakara Doshaghnata- Kapha vata shamaka, pittakara Aruchi, Krimi, Hridroga, Shophaghna, Brihmana, Netrya,
Therapeutic uses - jirna Jvara, Krimiroga, Gulma, Kushtha, Arsha, Kasa, Svasa, Pinasa, Sula, Karnashula Vatavyadi, Hikka, Medoroga, Yoni Vyapat, Visucika, Pliha Vyddhi, Kshaya, Visama Jvara, Apasmara Unmada, , shopha, Hridroga, Vatashula, Trikashula, vrana, krimi Sciatica, Paralysis, Inflammation
Active Priciples: Allicin, diallyl disulphide, allyl propyl disulphide

HINGU

Synonyms- Sahasravedhi, Jatuka, Ramatha
Latin name-Ferula narthex
Family- Umbelliferae
Vernacular Names:
Assamese – Hin;
Bengali – Hing;
English – Asfoetida;
Gujrati - Hing, Vagharni;
Hindi - Hing, Hingda;
Kannada - Hing, Ingu;
Kashmiri – Eng;
Malayalam – Kayam;
Marathi - Hing, Hira, Hing;
Oriya - Hengu, Hingu;
Punjabi – Hing;
Tamil – Perungayam;
Telugu – Inguva;
Urdu - Hitleet, Hing

Properties

Rasa- Katu Guna- Laghu, Snigdha, Teekshna
Veerya- Ushna
Vipaka- Katu
Karma- Pachan, Ruchyam,Shula Gulma, Udara, Anaha, anulomana, dipana, hridya, krimighna, pachana, ruchya, Streepushpajanana, Balya, Doshaghnata- Kapha vata shamaka Therapeutic uses: - sularoga, adhmana, Gulma, Hrdroga, Krimiroga, Udararoga, agnimandya, anaha

Active Principles: Dried asafetida consists mostly of a resin and a complex carbohydrate part. The essential oil (10%) contains a wealth of sulfur compounds. The essential oil contains also some terpenes and hendecylsulphonyl acetic acid. Ethers of sesquiterpenes with coumarins have also been identified.

JEERAKA

Synonyms- Jeeraka, Ajaji, Jarana
Latin name- cuminum cyminum
Family- Umbelliferae
Vernacular Names:
Assamese - Jira;
Bengali : Jira, Sadajira;
English - Cumin seed. Cumin;
Gujrati - Jirautmi, Jirn, Jiraugi, Jeeru, Jirun;
Hindi - Jira, Safed jira;
Kannada - Jirage, Bilejirege;
Kashmiri - Safed Zoor;
Malayalam - Jeerakam;
Marathi - Pandhare jire;
Oriya - Dhalajeera, Dalajira, Jira;
Punjabi - Safed Jira, Chitta Jira;
Tamil - Sheeragam, Chirakam, Jeerakam;
Telugu - Jilakarra, Tella Jilakarra;
Urdu - Zirah, Zirasafed

Properties

Rasa- Katu
Guna- Laghu, Ruksha, tikshna
Veerya- Ushna
Vipaka- Katu
Karma- dipana, grahi, krimighna, pachana, ruchya
Doshaghnata- Kapha vata shamaka
Therapeutic uses - Agnimandya, Atisara, Krimiroga Vishamajvara, Agnisada, Vataroga hara

SAINDHAVA LAVANA
Synonyms- Sindhu lavana, Sindhoottha, Sindhupalam, Sindhubhavam
Vernacular Names:
Kannada- Saindhava
Hindi- Sedhalon
English- Rock Salt
Chemical Composition – Sodium Chloride

Properties
Guna- Sheeta, Snigdha, Laghu Veerya-Mrudu
Karma- Hrudya, Vrushya, Netrya, Ruchiprada,
Pachana, Deepana, Vrana doshahara, Vibandha hara.
Doshaghnata- Tridosha shamaka

SAUVARCHALA LAVANA
Synonyms- Ruchaka, Ruchya, Hridya, Krishna lavana, Kalalavana

Vernacular Names
Sanskrit- Sauvarchala
Kannada- Turarimannu
Hindi- Sonchan, Kala namak
English- Black Salt
Chemical Composition –Chloride of Sodium, Sulphate of Soda, Caustic Soda
Properties: Guna- Vishada, Laghu,sasneha Karma: Hridyam, Pachanam, Deepanam, Rochana, Bhedana Vatanulomana, Gulmaghna, Vibandha, anaha, shulaghna,

SHUNTHI
Synonyms-Nagara, Vishvabheshja, Mahoushadha, vishva, shringavera, vishvaushadha
Latin name- Zingiber officinale
Family- Zingiberaceae

Vernacular Names
Assamese - Adasuth, Aadar Shuth;
Bengali - Suntha, Sunthi;
English - Ginger root, Ginger;
Gujrati - Sunth, Sundh, Suntha;
Hindi – Sonth;
Kannada – Shunthi;
Kashmiri – Shonth;
Malayalam – Chukku;
Marathi – Sunth;
Oriya – Sunthi;
Punjabi – Sund;
Tamil - Sukku, Chukku;
Telugu - Sonthi, Sunti;
Urdu - Sonth, Zanjabeel
Properties: Rasa- Katu
Guna- Laghu, Snigdha
Veerya- Ushna
Vipaka-Madhura,Katu
Karma : Anulomana, Dipana, Hridya, Pacana, ashmadosha hara
Doshaghnata - Kaphavata shamaka
Therapeutic uses - Agnimandya, svasa, adhmana, amavata, Pandu, Udararoga

Active Compounds: The dried rhizome of ginger contains approximately 1-4% volatile oils. The aromatic principles include zingiberene and bisabolene, while the pungent principles are known as gingerols and shogaols, Arylalkane - Pungent Substances, Gingerdiols. Uses: Atherosclerosis and high cholesterol, Migraine headaches, Morning sickness, Motion sickness, Rheumatoid arthritis, Belching, Vomiting, Constipation, Flatulence, Colic, pasms, Fever, Asthma, Cold, Cough Arthritis, bursitis, fibrocystic breasts, lymphedema, and pain. Ginger inhibits the production of immune-system components called cytokines. These chemicals are believed to create a long-term tendency toward inflammation. Ginger also stimulates blood circulation. These effects of ginger are taken advantage of in treating a number of disorders marked by swelling and pain, such as arthritis. Studies have also shown that ginger can relieve pain without the side effects typically found when using nonsteroidal anti-inflammatory drugs (NSAIDs) and steroids.

MARICHA
Synonyms- Vellaja, Krishna, Ushana
Latin name- Piper nigrum
Family- piperaceae
Vernacular Names:
Beng. - Golmorich, Kalamorich, Morich;
Eng. - Black Pepper;
Guj. - Kalimori;
Hindi. - Kalimirch;
Kan. - Karimonaru, Menaru;
Mal. : Kurumulaku;
Mar. - Kalamiri; Punj. - Galmirich, Kalimirch;
Tam. - Milagu;
Tel. -Miriyalu, Marichamu;
Urdu - Filfil Siyah, Kalimirich

Properties
Rasa- Katu, tikta
Guna- Laghu, Teekshna, ruksha
Veerya- Ushna
Vipaka- Katu
karma: Dipana, Medohara, ruchya, chedana, jantunashana, chedi
Doshaghnata- Kaphavata shamaka, Pittakara
Therapeutic uses - svasa, sula, Krimiroga, Tvagroga, hridroga, vataroga
Chemical Constituents Piperine is the active principle of black pepper

PIPPALI
Synonyms- Magadhi, Vaidehi, Kana, Kola, krishna
Latin name- Piper longum
Family- Piperaceae
Vernacular Names:
Assamese - Pippali;
Bengali - Pipul;
English - Long Pepper;
Gujrati - Lindi Peeper, Pipali;
Hindi - Pipar;

Kannada - Hippali;
Malayalam - Pippali;
Marathi - Pimpali, Lendi Pimpali;
Oriya - Pipali, Pippali;
Punjabi - Magh, Magh Pipali;
Tamil - Arisi Tippali, Thippili;
Telugu - Pippalu;
Urdu -Filfil Daraz
Properties: Rasa-Madhura,katu,Tikta
Guna- Laghu, Snigdha, Teekshna
Veerya- Anushnasheeta
Vipaka- Madhura
Doshaghnata- Kaphavata shamaka, tridoshahara
Karma : dipana, hridya, Rucya, vrishya, R¡sayana, Recana

Chemical constituents The fruit contains 1% volatile oil, resin, alkaloids Piperin and piperlonguminine, and a terpenoid substance. The roots have piperine, periongumine or piplartin, dihydro-stigmasterol.

Therapeutic uses - sula, arsha, Gulma, Hikka, Kasa, Krimi, Kshaya, Kushtha, Pliharoga, Prameha, Svasa, Trishna, Udara Roga, amavata, amadosa, Jvara, The infusion of root is prescribed after parturition to induce the expulsion of placenta. The roots and spikes are used in gout and lumbago. Infusion is used as a stimulant; carminative it is an aphrodisiac and externally acts as a rubefacient. Powdered long pepper administered with honey will relieve cough, cold, asthma hoarseness and hiccup.

ERANDAMULA KASHAYA
Ingredients: Erandamula kashaya churna

Preparation: Prepared coarse powder of Erandamula 1 part to that 16 parts of water is added and subjected for the process of heating under moderate flame and was reduced up to ¼ th part and then filtered through a clean cloth and 150ml of Kashaya is filled in the each bottles and preserved.

ERANDA
Synonyms- Gandharva hasta, Pachangula, Urubaka vatari, Citra, Urubu, Rubu
Latin name –Ricinus commnis
Family - Ephorbiaceae

Vernacular Names
Assamese - Eda, Era;
Bengali – Bherenda;
English - Castor oil plant;
Gujrati - Erandio, Erando;
Hindi - Arand, Erand, Andi, Rend;
Kannada - Haralu, Oudala gida;
Kashmiri - Aran, Banangir;
Malayalam : Avanakku;
Marathi : Erand;
Oriya : Jada, Gaba;
Punjabi – Arind;
Tamil – Amanakku;
Telugu : Amudapu veru;
Urdu : Bedanjir, Arand

Properties
Rasa-Madhura,
Anurasa-Katu, Kashaya
Guna- Snigdha, Teekshna, Sukshma, guru
Veerya- Ushna
Vipaka- Madhura
Karma : Vatahara, vrishya, amapacana Srotovishodhana, vayasthapana, Adhobhagadoshahara
Doshaghnata- Kaphavata shamaka

Therapeutic uses - shotha, Jvara, Udararoga, amavata, bastisula, katishula Anthelmentic, Antitussive, Emollient, Expectorant, Laxative, Purgative. In case of marga vibaddata by kapha, meda, pitta or rakta which is likely to provocate vata, for marga shuddi one should go for preparation like payas, mamsarasa, triphala rasa yusha, mutra ora madira. The same treatment is also followed in case of Gridrasi, Pakshaghata and other virechanartha vatavyadhi. Owing to the doshanubandha, Erand is considered to be the superior most. Due to samyoga vishesha it causes virechana and thus mitigates vata.

PHYSICO CHEMICAL ANALYSIS OF RASONA PINDA
The preliminary physicochemical screening test was carried out for RASONA PINDA as per the standard procedures mentioned hereunder.
1. Loss on Drying: An accurately weighed 1g of RASONA PINDA formulation was taken in a tarred glass bottle. The crude drug was heated at 1050C for 6 hours in an oven till a constant weight. The Percentage moisture content of the sample was calculated with reference to the shade dried material.

2. Determination of total ash: Weighed accurately 2g of RASONA PINDA formulation was added in crucible at a temperature 6000C in a muffle furnace till carbon free ash was obtained. It was calculated with reference to the air dried drug.

3. Determination of acid insoluble ash: Ash above obtained, was boiled for 5min with 25ml of 1M Hydrochloric acid and filtered using an ash less filter paper. Insoluble matter retained on filter paper was washed with hot water and filter paper was burnt to a constant weight in a muffle furnace. The percentage of acid insoluble as was calculated with reference to the air dried drug.

4. Determination of water soluble ash: Total ash 1g was boiled for 5min with 25ml water and insoluble matter collected on an ash less filter paper was washed with hot water and ignited for 15 min at a temperature not exceeding 4500C in a muffle furnace. The amount of soluble ash is determined by drying the filtrate.

5. Determination of water soluble Extractive: 5gm of air dried drug, coarsely powered RASONA PINDA was macerated with 100ml of distilled water in a closed flask for twenty-four hours, shaking frequently. The Solution was filtered and 25 ml of filtrated was evaporated in a tarred flat bottom shallow dish, further dried at 1000C and weighted. The percentage of water soluble extractive was calculated with reference to the air dried drugs.

6. Determination of alcohol soluble extractive: 1 gm of air dried drug coarsely powdered RASONA PINDA was macerated with 20 ml alcohol in closed flask for 24 hrs. With frequent shaking, it was filtered rapidly taking precaution against loss of alcohol

10ml of filtrate was then evaporated in a tarred flat bottom shallow dish, dried at 1000C and weighted. The percentage of alcohol soluble extractive was calculated with reference to air dried drug.

The observed values of the physic-chemical properties are given below:-

S.no	Parameters	Percentage
1	Loss on drying	2.5646%
2	Total ash value	24.4115%
3	Acid insoluble ash	2.4977%
4	Water soluble ash	20.8229%
5	Water soluble extraction	47.1831%
6	Alcohol soluble extraction	2.4893%

PRELIMINARY PHYTOCHEMICAL SCREENING OF RASONA PINDA

The preliminary phytochemical screening test was carried out for each extracts of RASONA PINDA as per the standard procedure mentioned here under.

1. Detection of alkaloids: Extracts were dissolved individually in dilute Hydrochloric acid and filtered.

a) Mayer's Test: Filtrates were treated with Mayer's reagent (Potassium Mercuric Iodide). Formation of a yellow colour precipitate indicates the presence of alkaloids.

b) Dragendroff's Test: Filtrates were treated with Dragendroff's reagent (Potassium Bismuth Iodide). Formation of a red precipitate indicates the presence of alkaloids.

c) Wagner's Test: Filtrates were treated with Wagner's reagent (Iodine in Potassium Iodide). Formation of brown/reddish precipitate indicates the presence of alkaloids.

2. Detection of carbohydrates: Extracts were dissolved individually in 5 ml distilled water and filtered. The filtrates were used to test for the presence of carbohydrates.

a) Molisch's Test: To 2 ml of plant sample extract, two drops of alcoholic solution of αnaphthol are added. The mixture is shaken well and few drops of concentrated sulphuric acid is added slowly along the sides of test tube. A violet ring indicates the presence of carbohydrates.

b) Benedict's Test: Filtrates were treated with Benedict's reagent and heated gently. Orange red precipitate indicates the presence of reducing sugars.

3. Detection of saponins Foam Test: 0.5 gm of extract was shaken with 2 ml of water. If foam produced persists for ten minutes it indicates the presence of saponins

4. Detection of phenols Ferric Chloride Test: Extracts were treated with 3-4 drops of ferric chloride solution. Formation of bluish black color indicates the presence of phenols.

5. Detection of tannins Gelatin Test: The extract is dissolved in 5 ml of distilled water and 2 ml of 1% solution of Gelatin containing 10% NaCl is added to it. White precipitate indicates the presence of phenolic compounds.

6. Detection of Flavonoids

a) Alkaline Reagent Test: Extracts were treated with few drops of sodium hydroxide solution. Formation of intense yellow color, which becomes colorless on addition of dilute acid, indicates the presence of flavonoids.

b) Lead acetate Test: Extracts were treated with few drops of lead acetate solution. Formation of yellow color precipitate indicates the presence of flavonoids.

7. Detection of diterpenes Copper Acetate Test: Extracts were dissolved in water and treated with 3-4 drops of copper acetate solution. Formation of emerald green color indicates the presence of diterpenes.

8. Test for Quinones: Extract was treated with sodium hydroxide blue or red precipitate indicates the presence of Quinones.

9. Gum and Mucilage: To 1ml of extract add 2.5ml of absolute alcohol and stirring constantly. Then the precipitate was dried in air and examine for its swelling properties. Swelling was observed that will indicate presence of gum and mucilage.

S.No.	Phytochemicals	Test Name	H_2O Extract
1	Alkaloids	Mayer's Test Dragendroff's Test Wagner Test	-ve +ve -ve
2	Carbohydrates	Molisch's Test Benedict Test	+ve +ve
3	Saponin	Foam Test	-ve

4	Phenols	Ferric Chloride Test	+ve
5	Tannins	Gelatin Test	+ve
6	Flavonoids	Alkaline Reagent Test Lead acetate	+ve +ve
7	Diterpenes	Copper Acetate Test	+ve
8	Quinones	Test for Quinones	-ve
9	Gum & Mucilage	Test for Gum & Mucilage	+ve

+ve/-ve present or absent if component tested

DISCUSSION

- The observed values of the physio chemical properties

Loss on drying	2.5646%
Total ash value	24.4115%
Acid insoluble ash	2.4977%
Water soluble ash	20.8229%
Water soluble extraction	47.1831%
Alcohol soluble extraction	2.4893%

- In Rasona pinda formulation the phytochemicals properties like gum and mucilage alkaloids, carbohydrate, flavonoids, tannins, diterpenes, phenols were present and absence of quinine, Saponin.

CONCLUSION

Rasona pinda acts as vatakaphahara and it also is vyadhi hara rasayana. As Rasona pinda is a unique oral medication, act as vyadhihara rasayana in patients suffering from vatavyadhi in general and particularly Amavata. Rasona pinda is vata and kaphahara. It is also proved to have an anti-inflamatory effect. Trikatu with its ushna virya helps in the digestion of ama and improves the agni. When seen as combination,most of the constituents are of katutiktarasa, katuvipaka, ushnaveerya and kaphavatashamaka. They are deepana, pachana, laghu, sukshma, teekshna and rasona, which is the main ingredient, is an important rasayana. So, the drug rasonapinda also inherits the properties.Hence due to rasa veerya and vipaka, it has deepana action, which acts upon the major factor in samprapti, i.e. agnimandya. As it is laghu, sukshma and teekshna, it can enter even sukshmasrtotasa and helps to remove ama out of srotasa and clear them for smooth functioning of vata. So, srtotorodhajanitavataprakopa is pacified. The vishyandana action of lavana and chedana action of kshara in the combination adds to this by removal of ama that is stuck (leena) in srotasa. Most of the drugs of this combination are kaphavatashamaka. Vata vitiated due to its own nidana is pacified. Erandamula kwatha is kaphavata shamaka and causes shrotovishodhana. Owing to the doshanubandha, Eranda is considered to be the superior most. Due to samyoga vishesha it causes virechana and thus mitigates vata.

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