International Journal of Medicinal Plants and Natural Products (IJMPNP)
Volume 1, Issue 2, July - September 2015, PP 4-7
www.arcjournals.org

Preliminary Analytical Study of Rasnasapthakam Kashayam - An Ayurvedic Polyherbal Formulation

James Chacko[1], Sivabalaji[2], Ashwini[3]

[1]Associate Professor, Department of Kayachikitsa, Amrita School of Ayurveda, Kollam
[2]Assistant Professor, Department of Shalakya, Amrita School of Ayurveda, Kollam
[3]Assistant professor, Department of Shalakya, Sri Jadguru Gavisiddeswar Ayurveda College, Koppal

Abstract: *Rasnasapthakam kasayam is purely a polyherbal product commonly used for the management of sandhigata vata .It's a decoction prepared out of seven herbs having water soluble active ingredients namely Rasna(Alpinia galanga wil) Amrutha (Tinospora cordifolia.Willd) Aragwadha assia fistula Linn) Devadaru (Cedrus deodara roxb) Trikantak (Tribulus terrestris) Eranda (Ricinus communis Linn) Punarnava (Boerhaavia diffusa Linn).*

Lack of standardization of poly-herbal formulations creates difficulty in validation of the efficacy and maintaining quality of the product. Hence an attempt has been made to study Rasnasapthakam kasayam by analyzing through qualitative and quantative physiochemical parameters and to develop fingerprints of High performance thin layer chromatography (HPTLC). Four major peaks with RF values 0.22, 0.48, 0.54 and 0.77 were found in HPTLC graph. The data obtained in the present study will help to maintain the quality of the formulation.

Keywords: *Rasnasapthakam kasayam, Sandhigatavata, Osteoarthritis, chromatography.*

1. INTRODUCTION

Ayurveda utilizes plant as the most powerful healing agents .plants are endowed with biologically active chemicals like alkaloids, glycosides, polysaccharides. Most of these principles are water soluble and aretilized in the manufacturing of kasayas(decoctions) .To get the desired pharmaceutical benefits in a particular diseased condition various poly-herbal drugs are utilized in the treatment.

An underlying diseases is reflected in a person with signs and symptoms produced by the tridoshas (Biological humour of body responsible for the diseases) [1]. A compound formulation is prepared by selecting the drugs having specific action against the Doshas involved in the pathogenesis of disease. Rasnasapthakam[2] is one such kasayam (decoction) made out of seven drugs which includes Rasna[3] (Alpinia galangal wild.) Amrutha (Tinospora cordifolia.Willd.) Arogwadha (Cassia fistula Linn) Devadaru (Cedrus deodara roxb) Trikantak (Tribulus terrestris) Eranda (Ricinus communis Linn) Punarnava (Boerhaavia diffusa Linn).This is an important compound formulation mentioned in Ayurvedic classics for diseases of various sandhi- Asthi-Majja gata vatam, also in conditions of Sarvangavatam vatam, but till date this decoction has not being standardized with any modern parameters.

Joint pain is a global problem affecting 70-80% of world population they may be of multiple causes[4], but patient above 40-70 years shows radiographic evidence of osteoarthritis. It is characterized by degeneration of joints cartilage leading to joint swelling, pain, decreased range of motion and joint stiffness .Risk factor for osteoarthritis includes previous joint injury, abnormal development, overweight, joint stress and inflammation. The most common joint involved is that of the knee.

The disease can be correlated to the condition of Sandhigata vatam[5] mentioned in Ayurvedic scriptures. The disease is due to Vata vriddhi (increase of biological factor vata) leading to Dhatu Kshaya (decrease or degeneration of joint structures).the classical clinical presentations of this disease involves pain on joint movement as well as joint swelling.

In the field of Ayurveda there is no proper standardization. Standardization of the compound formulation is the need of the present era to set standards for maintaining the quality of the products.

Even though specific parameters are available in the Ayurvedic classics it is necessary to evaluate their safety and efficacy through modern parameters. Keeping this in view, the CCRAS committee

has set specific criteria for specific dosage forms[6] .Here an attempt has been made to study Rasnasapthakam kasayam analytically and to develop fingerprints of High-Performance Thin Layer Chromatography study (HPTLC).

2. MATERIAL AND METHODS

Collection of raw drugs: All the individual drugs of the compound drugs of the formulation Rasnasapthakam were bought from the local markets of ERNAKULAM Dist of kerala and they were authenticated in the department of Dravyaguna, Angelis Ayurveda medical college Kothamangalam Kerala

Pharmaceutical study: Rasnasapthakam kasayam was prepared with the ratio mentioned in Table 1 at Department of Rasashastra and Bhaishajya Kalpana, Nangelil Ayurveda College, Kothamangalam, Kerala.

2.1. Method of Preparation

After the identification of the drug, drugs were washed and dried properly. Then the drugs were pounded to convert into yavakuta churna (coarsely powder form). One pala (48 gm) of the drugs was mixed with 16 parts of water and boiled in an earthen pot over a mild fire till the liquid portion was reduced to 1/8th of the original quantity[7].

Table1. *Ingredients of Rasnasapthakam Kasayam*

Sl no	Ingredients	Botanical name	Parts used	Ratio
1.	Rasna	Alpinia galangal wild	Rhizome	1 Part
2.	Amrutha	Tinospora cordifolia.Willd	stem	1 part
3.	Arogwadha	Cassia fistula Linn	Fruit pulp	1 Part
4.	Devadaru	Cedrus deodara roxb	Stem	1 Part
5.	Trikantak	Tribulus terrestris	Fruit	1Part
6.	Eranda	Ricinus communis Linn	Roots	1Part
7.	Punarnava	Boerhaavia diffusa Linn	Whole plant	1Part

3. ANALYTICAL STUDY

The Analytical study deals with the physical and chemical evaluation of the given formulation carried out at SGS Labs India private limited. Ernakulum, Kerala and R&D unit at KOTTAKKAL Aryavaidya sala KOttakkal. Organoleptical parameters, Physico-chemical analysis were carried out by following standard procedure mentioned in Ayurvedic Pharmacopeia of India. Various organoleptical parameters of the formulation, such as colour, odour and taste of the Kasayam were recorded. In physical evaluation, Loss on drying at 105° C, Total dissolved solids, Total suspended solids, Ash value, Acid soluble ash, Specific gravity at 27° C, pH were determined. Extracts obtained by exhausting the drugs are indicative of approximate measures of certain chemical compounds they contain [8]

Heavy metal analysis: For acid digestion of sample, take 0.5g sample and 5 ml of Hcl + 5 ml of HNO3 + 1ml of H2 O2 in a closed vessel device using temperature control microwave heating at 200^{o}C for 15 minutes then after cooling the vessel device, then the solution was filtered and washed by deionizer water and make upto 25 ml solution. Instrument was calibrated with reference standard.

3.1. High Performance Thin Layer Chromatography (HPTLC)

Studies were carried out with solvent system toluene: ethyl acetate (7: 3). CAMAG HPTLC system equipped with a sample applicator Linomat V sample applicator was used for application of samples.

CAMAG TLC Scanner 3, Reprostar and Wincats 4.02 were used for scanning the plates. CAMAG twin through glass chamber was used for developing the plates. The sample Rasnasapthakam (2g) was extracted with 25 ml methanol for 1 hr. under reflux. The methanol extracts were filtered and concentrated to 5 ml and used as test solutions. 5µl of each test solution was spotted, the plates were developed in mobile phase of Toluene: Ethyl acetate (7: 3 v/v) and scanned at 254 nm.

4. RESULTS

The organoleptic characters of Rasnasapthakam kasayam - the colour was brown, odour was a typical smell of decoctions, taste was bitter and consistency was liquid in nature.

Analytical study Establishment of standard criteria using best sample as baseline with a range of standard errors i.e. 95% confidence limit was done

Table2. *Shows Phyto-chemical analysis of Rasnasapthakam kasayam*

Sl. No.	Parameters	Values
1.	pH	5.70
2.	Loss on drying at105^{o}c	99.81 %
3.	Total dissolved solids	0.33%
4.	Moisture (oven drying)	99.10%
5.	Ash	0.18%
6.	Acid insoluble ash	Not detected (DL: 0.01%)
7.	Specific gravity at 27^{0}c	0.9942%
8.	Total suspendable solids	0.56%

Heavy metal analysis: Heavy metal analysis of Rasnasapthakam kasayam was carried out and was under permissible limits. (Table 3)

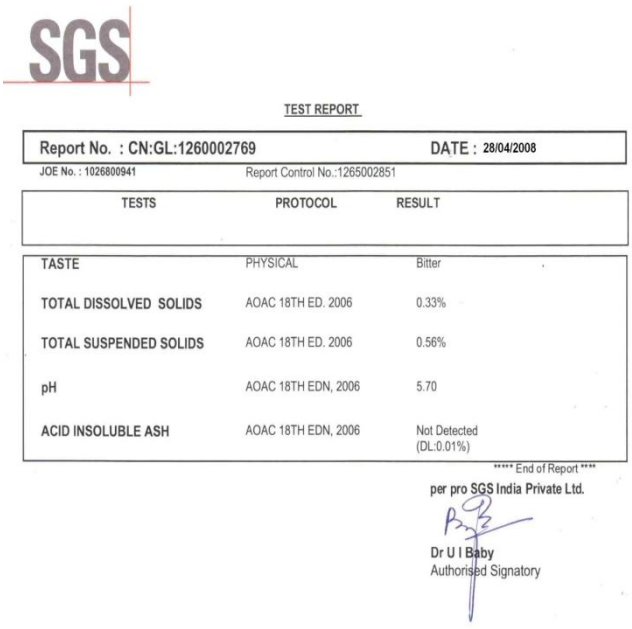
Table3. *Shows Heavy Metal analysis of Rasnasapthakam kasayam.*

Sl no.	Heavy Metals	Limits
1.	Arsenic	Not detected(DL: 0.01mg/kg)
2.	cadmium	Not detected(DL: 0.02mg/kg)
3.	Lead as pb	Not detected(DL: 0.5mg/kg)
4.	Mercury	Not detected(DL: 0.01mg/kg)

5. DISCUSSION

In the present era, standardization of herbal products is essential for several reasons. According to a survey (1993) of World Health Organization (WHO), the practitioners of traditional system of medicine treat about 80% of patients in India, 85% in Burma and 90% in Bangladesh.[14] Herbs are staging a come-back and the herbal renaissance is "the happening" all over the globe. Ironical fact – Ayurvedic System of medicine is still struggling to reach the heights beyond numerous hurdles in its path. One assessment of herbal formulations is of paramount importance in order to justify their acceptability in the present era. It becomes essential for anyone involved with manufacturing of drugs to provide the public a standard quality medicine. Few parameters are set by the World Health Organization (WHO) related with standardization. These parameters further are able to trace out any admixing (if done) with genuine drugs. PH shows that the Rasnasapthakam kasayam is acidic in nature (Table 2). The specific gravity at 27˚C is 0.9942. Ash value is 0.18% this proves that there is no much inorganic salts in the product.

6. CONCLUSION



SGS

TEST REPORT

Report No. : CN:GL:1260002769 DATE : 28/04/2008

JOE No. : 1026800941 Report Control No.:1265002851

TESTS	PROTOCOL	RESULT
TASTE	PHYSICAL	Bitter
TOTAL DISSOLVED SOLIDS	AOAC 18TH ED. 2006	0.33%
TOTAL SUSPENDED SOLIDS	AOAC 18TH ED. 2006	0.56%
pH	AOAC 18TH EDN, 2006	5.70
ACID INSOLUBLE ASH	AOAC 18TH EDN, 2006	Not Detected (DL:0.01%)

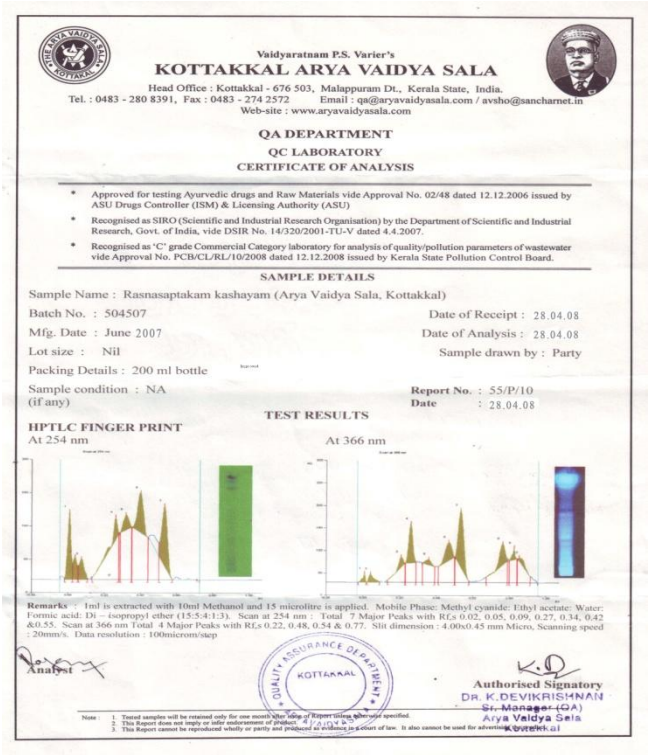
**** End of Report ***

per pro SGS India Private Ltd.

Dr U I Baby
Authorised Signatory

Picture1. *Standardization Report of Rasnasapthakam Kwatha*

Standardization is needed for Ayurvedic drugs to ensure proper usage of correct raw materials and to establish quality control parameters for traditional medicines before it is released for use without the fear of toxicity. The data evolved in this study will help for routine quality control of Rasnasapthakam kasayam and which will help to establish the genuine of the individual drugs used. Further studies should be carried out with Supercritical fluid chromatography (SFC).Capillary electrophoresis (CE),Liquid Chromatography-Mass spectroscopy(LCMS)to have this drug within its at most form in terms of quality.



Vaidyaratnam P.S. Varier's
KOTTAKKAL ARYA VAIDYA SALA
Head Office : Kottakkal - 676 503, Malappuram Dt., Kerala State, India.
Tel. : 0483 - 280 8391, Fax : 0483 - 274 2572 Email : qa@aryavaidyasala.com / avsho@sancharnet.in
Web-site : www.aryavaidyasala.com

QA DEPARTMENT
QC LABORATORY
CERTIFICATE OF ANALYSIS

- Approved for testing Ayurvedic drugs and Raw Materials vide Approval No. 02/48 dated 12.12.2006 issued by ASU Drugs Controller (ISM) & Licensing Authority (ASU)
- Recognised as SIRO (Scientific and Industrial Research Organisation) by the Department of Scientific and Industrial Research, Govt. of India, vide DSIR No. 14/320/2001-TU-V dated 4.4.2007.
- Recognised as 'C' grade Commercial Category laboratory for analysis of quality/pollution parameters of wastewater vide Approval No. PCB/CL/RL/10/2008 dated 12.12.2008 issued by Kerala State Pollution Control Board.

SAMPLE DETAILS

Sample Name : Rasnasaptakam kashayam (Arya Vaidya Sala, Kottakkal)
Batch No. : 504507 Date of Receipt : 28.04.08
Mfg. Date : June 2007 Date of Analysis : 28.04.08
Lot size : Nil Sample drawn by : Party
Packing Details : 200 ml bottle
Sample condition : NA (if any) Report No. : 55/P/10 Date : 28.04.08

TEST RESULTS

HPTLC FINGER PRINT
At 254 nm At 366 nm

Remarks : 1ml is extracted with 10ml Methanol and 15 microlitre is applied. Mobile Phase: Methyl cyanide: Ethyl acetate: Water: Formic acid: Di – isopropyl ether (15:5:4:1:3). Scan at 254 nm : Total 7 Major Peaks with Rfs 0.02, 0.05, 0.09, 0.27, 0.34, 0.42 &0.55. Scan at 366 nm Total 4 Major Peaks with Rfs 0.22, 0.48, 0.54 & 0.77. Slit dimension : 4.00x0.45 mm Micro, Scanning speed : 20mm/s. Data resolution : 100microm/step

Analyst

QUALITY ASSURANCE DEPARTMENT KOTTAKKAL

Authorised Signatory
DR. K.DEVIKRISHNAN
Sr. Manager (QA)
Arya Vaidya Sala
Kottakkal

Note : 1. Tested samples will be retained only for one month after issue of Report unless otherwise specified.
2. This Report does not imply or infer endorsement of product.
3. This Report cannot be reproduced wholly or partly and produced as evidence in a court of law. It also cannot be used for advertisement.

(c) Figure showing the HPTLC Finger Print of Rasna Sapthakam Kashayam

REFERENCES

[1] Charaka Samhita(Ayurveda deepika commentary of chakrapanidatta), Jadavaji Trikamji Acharya,Editor.Varanasi;Chaukhambha Prakasham2007 Sutra stana 1st chapter.

[2] Krishnan vaidyan KV,Gopala pillai S Editors. Sahasrayogam (Sujanpriya commentary) 27th Edition. Alappuzha:Vidyarambha publishers2007 . Page no: 83

[3] Dravyaguna vijnaneyam by Gyanendra pandey. Volume 3, Chowkhamba krishnadas academy, Varanasi ,Edition 2004 (reprint) Page no-232

[4] Pain in Osteo-Arthritis Bioline International. www.bioline.org.br/pdf?md08017 *viewed on 25th june 2015.*

[5] Charaka Samhita (Ayurveda deepika commentary of chakrapanidatta), Jadavaji Trikamji Acharya, Editor. Varanasi; Chaukhambha Prakasham2007 Chikitsa stana28

[6] Safety/toxicity study report of some Ayurvedic drugs by Central council for research in Ayurveda &Siddha, Department of Ayush, Ministry of health& family welfare, NewDelhi, 2009 Edition.

[7] Bhaishjya kalpana Vijnanam, by Santhose kumar Mishra, printed by Chowkambha orientalia, Edition 2004 Page no-289-305.

[8] Anonymous Ayurvedic Pharmacopoeia, part 2, volume 2Appendice 1st Edition New Delhi, Govt of India, Ministry of Health and Family Welfare;2008 page 15.