International Journal Of

Recent Scientific Research

ISSN: 0976-3031
Volume: 7(4) April -2016

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THE OFFICIAL PUBLICATION OF
INTERNATIONAL JOURNAL OF RECENT SCIENTIFIC RESEARCH (IJRSR)
http://www.recentscientific.com/ recentscientific@gmail.com

ISSN: 0976-3031

Available Online at http://www.recentscientific.com

International Journal of Recent Scientific Research
Vol. 7, Issue, 4, pp. 10398-10400, April, 2016

International Journal of Recent Scientific Research

Research Article

PHARMACOLOGICAL AND PHYTOCHEMICAL EVALUATION OF UDARDA PRASHAMANA MAHAKSHAYA

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ARTICLE INFO

Article History:

Received 15th January, 2016
Received in revised form 21st February, 2016
Accepted 06th March, 2016
Published online 28th April, 2016

Keywords:

Udarda Prashamana Mahakshaya, Udarda, Sheetapitta, Kushthaghana.

ABSTRACT

Udarda Prashamana Mahakshaya is a multi-herb decoction which contains ten important herbs in equal quantity. The present study provides updated information on its phytochemical analysis and pharmacological properties. The phytochemical analysis of the *Kshaya* revealed the presence of Alkaloid, Carbohydrate, Starch, Proteins, Tannin and Resin. The decoction have *Tridoshaghana* action mainly *Kapha-pittahara* along with *Rakta Prasadana, Kushthaghana, Shothahara* etc. The physiochemical properties of *Kshaya* showed Loss on Drying at 105^0C – 12.0%, Total solid – 88.0%, Total Ash – 9.5%, Acid insoluble Ash – 1.0%, Water Soluble Extractive – 9.6%, Alcohol Soluble Extractives – 6.0% and pH – 6.87. Microscopic study showed yellowish Brown patches of cells, prismatic calcium oxalate crystals, leaf surface with stomatal cells and fiber cells major contents as per claim are present and have been identified through TLC.

INTRODUCTION

Plant based drugs have formed the basis of traditional medicine systems that have been used for centuries in many countries.[1] Today plant-based drugs continue to play an essential role in health care. It has been estimated by the World Health Organization that 80% of the population of the world rely mainly on traditional medicines for their primary health care.[2]

Udarda Prashamana Mahakshaya is a unique preparation explained in *Charaka Samhita Sutrasthana*[3] which is indicated in *Udarda, Sheetapitta, Kotha* with *Tridoshaghana* action mainly *Kapha-pittahara* along with *Rakta Prasadana, Kushthaghana, Shothahara* actions etc.

Udarda Prashamana Mahakshaya mainly contains ten drugs. They are – *Tinduk (Diospyros peregrina), Priyala (Buchanania lanzan), Badar (Zizyphus jujuba), Khadir (Acacia catechu), Kadar (Acacia suma), Saptaparna (Alstonia scholaris), Ashwakarna (Dipterocarpus turbinatus), Arjuna (Terminalia arjuna), Asana (Pterocarpus marsupium), Arimeda (Acacia leucophloea)* in equal quantity.[3]

The study scientifically validates the use of herbal drugs in traditional medicine and it contributes to the development of standardized parameters of *Kshaya* in *Indian system of medicine*. Thus in the present study pharmacological, phytochemical evaluation of *Udarda Prashamana Mahakshaya* were undertaken.

MATERIAL AND METHODS

Collection and authentication of drugs **-** The raw drugs were collected from botanical garden and purchased from local market. The identity of the drugs was confirmed by Professor and HOD of *Dravya Guna* Department, Rajeev Gandhi Government Post Graduate *Ayurvedic* College, Paprola, Himachal Pradesh. These drugs were compared with voucher specimen and available literature in institute.

Ingredients – *Udarda Prashamana Mahakshaya* mainly contains ten drugs – Tinduk (*Diospyros peregrina*), Priyala (*Buchanania lanzan*), Badar (*Zizyphus jujuba*), Khadir (*Acacia catechu*), Kadar (*Acacia suma*), Saptaparna (*Alstonia scholaris*), Ashwakarna (*Dipterocarpus turbinatus*), Arjuna (*Terminalia arjuna*), Asana (*Pterocarpus marsupium*), Arimeda (*Acacia leucophloea*).

Method of Preparation of Kshaya – *Kshaya* (Decoction) was prepared using one part of *Udarda Prashamana Mahakshaya* coarse powder and sixteen parts of water was added and boiled

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on medium flame till it gets reduced to 1/4th as per the classical reference. *Kshaya* was filtered and stored in a clean vessel.[4]

Analytical Study – *Udarda Prashamana Mahakashaya* was subjected for analytical study as per the standards of *Ayurvedic* Pharmacopeia of India at Drug Testing Laboratory, Research Institute in ISM Joginder Nagar, Department of Indian System of Medicine & Homeopathy, Himachal Pradesh.

RESULTS

Pharmacological study: Table showing pharmacological properties of ten ingredients of *Udarda Prashmana Mahakshaya* [5-7] –

Name	Rasa	Guna	Veerya	Vipaka	Dosha Karma
Tinduk6-173	Kashaya	Laghu, Ruksha	Sheeta	Katu	Kapha-pitta Shamaka
Priyala4-95	Madhura	Guru, Snigdha, Sara	Sheeta	Madhura	Vata-pitta Shamaka
Badar	Kashaya	Laghu, Ruksha	Sheeta	Katu	Kapha-pitta Shamaka
Khadir70	Tikta, Kashaya	Laghu, Ruksha	Sheeta	Katu	Kapha-pitta Shamaka
Kadar5-54	Tikta, Kashaya	Laghu, Ruksha	Sheeta	Katu	Kapha-pitta Shamaka
Saptaparna1-97	Tikta, Kashaya	Laghu, Snigdha	Ushana	Katu	Kapha-pitta Shamaka
Ashwakarna	Katu, Tikta	Laghu, Ruksha	Ushana	Katu	Kapha-vata Shamaka
Arjun2-17	Kashaya	Laghu, Ruksha	Sheeta	Katu	Kapha-pitta Shamaka
Asan3-19	Kashaya, Tikta	Laghu, Ruksha	Ushana	Katu	Kapha-pitta Shamaka
Arimeda2-15	Kashaya, Tikta	Laghu, Ruksha	Ushana	Katu	Kapha Shamaka

Phytochemical study

Organoleptical Characters – *Kshaya* was having brownish color, bitter taste and aromatic odour.

Physio-chemical Properties – *Kshaya* showed Loss on Drying at 105^{0}C – 12.0%, Total solid – 88.0%, Total Ash – 9.5%, Acid insoluble Ash – 1.0%, Water Soluble Extractive – 9.6%, Alcohol Soluble Extractives – 6.0% and pH – 6.87.

Identification Tests – Positive tests for Alkaloid, Carbohydrate, Starch, Proteins, Tannin and Resin.

Microscopic study

1. Yellowish Brown patches of cells.
2. Prismatic calcium oxalate crystals.
3. Leaf surface with stomatal cells.
4. Fiber cells major contents as per claim are present and have been identified through TLC.

Thin Layer Chromatography

Solvent System	Treatment	No. of spots	Rf Values
Tol:EA	UV	1	0.54
	Ansd Spray	7	0.22,0.43,0.51,0.58,0.72,0.88,0.94
Tol:EA:FA	UV	3	0.25,0.44,0.77
	$FeCl_3$ Spray	5	0.25,0.36,0.44,0.52,0.88
$CHCl_3$:MeOH	I_2	3	0.54,0.69,0.92

Probable mode of action of Kshaya

Udarda Prashamana Mahakashaya mentioned in *Charaka Samhita Sutrasthana* 4/8.43 is indicated in *Udarda*, *Sheetapitta* and *Kotha*.

On the basis of Rasa – Out of ten ingredients, *Kashaya Rasa* is present in eight drugs and *Tikta Rasa* is present in six drugs. If the actions of these *Rasas* are considered individually, *Kashaya* and *Tikta Rasa* are *Kapha-pitta Shamaka* and five ingredients are having both of these *Rasas. Madhura* and *Katu Rasas* are also present in one drug each. *Madhura Rasa* is *Vata-pitta Shamaka* and *Katu Rasa* is *Kapha Shamaka*.[8] Therefore the gross action of *Udarda Prashamana Mahakshaya* on *Doshas* is *Tridosha Shamaka*, mainly *Kapha-pitta Shamaka*. Pathogenesis of *Udarda* also indicates initial *Prakopa* of *Kapha-Vata Doshas* with *Kapha Dosha* dominancy and then *Samsarga* of *Kapha-Vata Dosha* with *Pitta Dosha*.[9] *Kapha-pitta Doshas* play dominant role in *Udarda*.

On the basis of Gunas – When an analysis of *Guna* of individual ingredients is carried out, it would be seen that five *Gunas* are present in *Mahakshaya* viz. *Laghu*, *Ruksha*, *Guru*, *Snigdha* and *Sara*. Out of these five *Gunas*, *Laghu* is present in maximum number of ingredients that is nine while *Ruksha Guna* is present in eight drugs. According to *Ayurveda*, *Laghu* and *Ruksha Gunas* are related to *Vayu* and *Akasha Mahabhootas*[10] and the action of these *Mahabhootas* is anti-*Prithvi* and anti-*Jala* that is anti-*Kapha*.[11] Since the ingredients of *Kshaya* are having dominance of these *Mahabhootas*, it is highly useful in *Kapha Dosha* dominant *Tridoshaja vikriti. Snigdha Guna* is in two ingredients and *Guru* in one. These are adequate to alleviate *Vata Dosha*, as it is not the dominant *Dosha* of *Udarda*.

On the basis of Veerya – So far as *Veerya* is concerned, analysis of all contents of *Kshaya* would reveal that out of ten ingredients, six are *Sheeta Veerya* and four are *Ushna Veerya*. This would mainly have *Pitta Shamaka* effects.

On the basis of Vipaka – Nine ingredients have *Katu Vipaka* and one has *Madhura Vipaka*. *Katu Vipaka* is *Kapha Shamaka*. *Madhura Vipaka* is *Pitta* and *Vata Shamaka*. Therefore overall action of the drug would be *Tridosha Shamaka* but mainly *Kapha Dosha Shamaka*. *Udarda* is also *Tridoshaja Vyadhi* with *Kapha* dominancy.

On the basis of Doshaghanata – All the drugs together have *Tridoshaghana* action mainly *Kapha-pittahara* along with *Rakta Prasadana*, *Kushthaghana*, *Shothahara* actions etc. Thus, the drug was having exact combination of properties, which enable it to counteract the disease process especially manifested by vitiated *Kapha*.

DISCUSSION

Udarda Prashamana Mahakshaya is a multi-herb decoction which contains ten important herbs in equal quantity. Organoleptical, Physio-chemical properties, Identification test, Microscopic study, TLC and probable mode of action of *Kshaya* were evaluated as a primitive step to analyze the *Udarda Prashamana Mahakshaya*.

As revealed by the results, Organoleptical characters showed bitterness in taste with aromatic odour and brownish in color, which may be due to the combination of bark of herbal drugs. Alkaloid, Carbohydrate, Starch, Proteins, Tannin and Resin were found in *Kshaya*. Microscopic study of *Kshaya* showed yellowish brown patches of cells, prismatic calcium oxalate crystals, leaf surface with stomatal cells and fiber cells as major contents and identified through TLC.

Probable gross action of *Udarda Prashamana Mahakshaya* on *Doshas* is *Tridosha Shamaka*, mainly *Kapha-pitta Shamaka*. Ingredients of *Kshaya* are having dominance of *Vayu* and *Akasha mahabhoots*, *Katu Vipaka*, it is highly useful in *Kapha Dosha* dominant *Tridoshaja vikriti*. All the drugs together have *Tridoshaghana* action mainly *Kapha-pittahara* along with *Rakta Prasadana*, *Kushthaghana*, *Shothahara* actions etc. The *Kshaya* was having exact combination of properties, which enable it to counteract the disease process especially manifested by vitiated *Kapha*.

CONCLUSION

In present study, various standardized parameters such as pharmacological, phytochemical and probable mode of action of *Udarda Prashamana Mahakshaya* were carried out, which could be helpful in standardization of *Kshaya* and provide useful information and authentication of the drugs. The phytochemical investigation can further be isolated and undergo further pharmacological evaluation of the active principles present in the *Kshaya*.

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How to cite this article:

Sheetal Verma and Vishal Verma.2016, Pharmacological and Phytochemical Evaluation of Udarda Prashamana Mahakshaya. *Int J Recent Sci Res.* 7(4), pp. 10398-10400.

TSSN 0976-3031