

An Insight into Physiological, Preliminary Phytochemical Analysis With Qualitative And Quantitative Parameter Screenings of Paathadikwath - A Polyherbal Ayurvedic Preparation Used In PCOS

Poonam Khot¹, Vishala Turlapati², Amit Tamadaddi³, Tinku-Ganesh Prabhu Khalache⁴,

Sonal Raut⁵

¹Ph.D. (Sch.), Department of Prasooti Tantra and Stree Roga, Yashwant Ayurvedic College for Post Graduate Training & Research Centre, Kodoli, Maharashtra, India. <https://orcid.org/0009-0008-3901-1774>, khotpoonam86@gmail.com

²Professor & HOD, Department of Prasooti Tantra and Stree Roga, Yashwant Ayurvedic College for Post Graduate Training & Research Centre, Kodoli, Maharashtra. <https://orcid.org/0000-0002-1734-784X>, vishalaturapati@gmail.com

³Associate Professor, Dept. of Agadatantra, Faculty of Ayurved, Main Campus, Uttarakhand Ayurved University, Dehradun, Uttarakhand. <https://orcid.org/0009-0007-7118-6518>, amitdoc03@gmail.com

⁴Ph.D. (Sch.), Department of Prasooti Tantra and Stree Roga, Yashwant Ayurvedic College for Post Graduate Training & Research Centre, Kodoli, Maharashtra, India. <https://orcid.org/0009-0005-4654-3160>, drkhalachepanacealabs@gmail.com

⁵Ph.D. (Sch.), Department of Prasooti Tantra and Stree Roga, Yashwant Ayurvedic College for Post Graduate Training & Research Centre, Kodoli, Maharashtra, India. <https://orcid.org/0009-0004-2606-099X>, sohum567@gmail.com

ABSTRACT

Background: Paathadikwath a Polyherbal Ayurvedic classical preparation used in broader range of therapeutic effects because of its effectiveness in wider range of manifestations in traditional practice. Paathadikwath containing five medicinal herbs, designed to enhance therapeutic efficacy through synergistic effect through ayurvedic fundamentals. In recent years clinical practice indicates potentially increasing Polycystic ovarian syndrome (PCOS) cases with high prevalence rates in young reproductive-age women. Ayurved clinical practice approach to have healthy progeny, emphasize is given for management through lifestyle changes, dietary advices, yoga and medications, Paathadikwath is most prescribed drug in the cases of PCOS. Traditional practiced drugs like Paathadikwath need to be explored and tested with biomedical techniques to meet present standards and safety concerns. Therefore, the present study deals with the systematic examination of the Paathadikwath. Objectives: To screen Physiological, Preliminary Phytochemical Analysis with specific Qualitative and Quantitative Parameters analysis of Paathadikwath. Methods: In this study Paathadikwath a polyherbal preparation has been reviewed through ayurvedic classical texts for its properties, characteristics. Paathadikwath is prepared using specialized process (Kwathakalpana), as per classical textbooks of Ayurveda and further laboratory screening of Physiological and Preliminary Phytochemical analysis of Paathadikwath has been performed to analyse as per standards of Ayurvedic pharmacopeia of India. Results: Tests demonstrates that prepared Paathadikwath is in accordance with the standards mentioned in standards of Ayurvedic pharmacopeia of India.

Keywords: PCOS, Paathadikwath, Polyherbal, Kwathakalpana

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1. INTRODUCTION

As per the traditional Ayurved system medicines prepared in the form of a polyherbal preparations are widely advised and prescribed because of its effectiveness in wider range of manifestations. Polyherbal preparations are composed of multiple medicinal plants bearing different properties and characteristics in a specific ratio, designed to work synergistically to achieve a therapeutic effect with no potential toxicity or any adverse effects. Kwathakalpana is

an ancient Ayurvedic method to prepare herbal decoctions, which gets its title from the Sanskrit term "Kwatha," which stands for decoction, which is the process of boiling plants in a certain volume of water to extract their therapeutic qualities. The condensed liquid is then used as a powerful medication to treat the disease conditions. Kwatha Kalpana is widely used by Ayurvedic practitioners to effectively deliver herbal water-soluble active ingredients. It is important in order to improve the bioavailability of herbal components, and promoting more efficient healing or

*Author for Correspondence: khotpoonam86@gmail.com

pharmacological action.^[1] Kwatha (Decoction) is one of the panchvidha kashaya kalpana i.e. group of five main categories of Ayurvedic pharmaceuticals: the others being Swarasa - fresh juice, Kalka - paste, Hima - cold infusion and Phanta - hot infusion.^[2] Paathadikwath^[3] is a classical preparation mentioned in the Ayurved literature of Sushruta Samhita for Vata-kaphaja Arthava dusthi resembling similar pathogenesis as seen in Polycystic ovarian syndrome (PCOS) causing Avarodha or Avarana in Artavavaha Srotas. PCOS is an endocrine- reproductive-metabolic disorder affecting women across all age groups, with a prevalence ranging from 4 % to 20 %.^[4] It is characterized by chronic anovulation, obesity, hyperandrogenism, acne, high insulin levels, and irregular menstrual cycles.^[5] Up to 20 % of women with fertility problems, including difficulty conceiving and early pregnancy loss, have PCOS.^[6]

2. OBJECTIVE:

To screen physiological, preliminary phytochemical analysis with Qualitative and Quantitative specific parameters screening of Paathadikwath.

3. MATERIAL AND METHODS:

In this study Paathadikwath a polyherbal preparation has been reviewed through ayurvedic classical texts for its properties, characteristics. Prior preparation of Paathadikwath, ingredient drugs of Paathadikwath are purchased from local genuine pharmacy, ingredients drugs are authenticated by an expert. Paathadikwath is prepared using specialized process (Kwathakalpana), as per classical textbooks of Ayurveda and further laboratory screening of Physiological and Preliminary Phytochemical analysis of Paathadikwath has been performed to analyse as per standards of Ayurvedic pharmacopeia of India. The screening parameters included for Physiological screening are Ash Value, Acid insoluble Ash, Water soluble extractive, Alcohol soluble extractive and pH. For Preliminary Phytochemical analysis screening parameters included are tests for Proteins, Steroids, Flavonoids, Alkaloids and Tannins. Tests for specified Micro-Organisms (Qualitative) included are for organisms of E coli, S. aureus, P. aeruginosa and S. abony. Microbial limit test (Quantitative) included are for Total Bacterial Count and Total Fungal Count.

3.1 Literature Review of Paathadikwath:

Paathadikwath is reviewed through Ayurvedic classical texts for its ingredients, properties, characteristics etc, as seen in following Table,

Table I: Ingredients of Paathadikwath –

Name of Ingredients	Botanical Name	Family	Part Used	Ratio
Paatha ^[7]	Cissampelos Pareira Linn.	Menispermaceae	Dried Root	1 part
Shunthi ^[8]	Zingiber Officinale Roscoe.	Zingiberaceae	Dry Rhizome	1 part
Maricha ^[9]	Piper Nigrum Linn.	Piperaceae	Dry Fruit	1 part
Pippali ^[10]	Piper Longum Linn.	Piperaceae	Dry Fruit	1 part
Kutaj ^[11]	Holarrhena antidysenterica Linn.	Apocynaceae	Dried Seed	1 part
Water				8 parts of Ingredients

Table II: Pharmacokinetics of Paathadikwath –

Name of Raw drug	Rasa	Guna	Virya	Vipaka	Doshakarma
Paatha ^[7]	Tikta	Laghu, Teekshna	Ushna	Katu	Kapha-pitta Shamaka
Shunthi ^[8]	Katu	Laghu, Snigdha	Ushna	Madhura	Kapha-Vata Shamaka
Maricha ^[9]	Katu	Laghu, Teekshana	Ushna	Katu	Vata-kapha Shamaka
Pippali ^[10]	Katu,	Laghu, Snigdha, Tikshna	Anushn asheeta	Madhura	Kapha-vata Shamaka
Kutaj ^[11]	Tikta, Kashaya	Laghu, Ruksha	Shita	Katu	Kapha-pitta Shamaka

3.2 Paathadikwath Preparation:

Paathadikwath is prepared using specialized process (Kwathakalpna), as per reference of classical textbooks of Sharngdhara Samhita as, for mrodu consistency four times of water, for madhyama consistency eight times of water, for kathina constancy eight times of water and for atikathina consistency sixteen times of water is taken and boiled on medium flame till reduced to 1/4th or 1/8th quantity.^[12] Ratio of water taken can also be considered according to the classical reference by Sharngdhara Samhita as, for 1 Karsha(12gms) to 1 Pala(48gms) of drug, 16 parts of water is taken, for 1 Pala to 1 Kudava(192gms) of drug, 8 parts of water is taken, for 1 Prashta(768gms) to 1 Khari(196gms) of drug, 4 parts of water can be taken and boiled on medium flame till reduced to 1/4th or 1/8th quantity.^[13]



3.3 Experimental Source:

Central Research Facility (AYUSH Approved ASU Drug Testing Laboratory Lic. No.TL-8/2011) of Shri B M Kankanawadi Ayurveda Mahavidyalaya, A Constituent Unit of KLE Academy of Higher Education & Research, Belagavi, Karnataka.

3.4 Experimental Screening Parameters:

The screening parameters included for Physiological screening are Ash Value, Acid insoluble Ash, Water soluble extractive, Alcohol soluble extractive and pH. For Preliminary Phytochemical analysis screening parameters included are tests for Proteins, Steroids, Flavonoids, Alkaloids and Tannins. Tests for specified Micro-Organisms (Qualitative) included are for organisms of E coli, S. aureus, P. aeruginosa and S. abony. Microbial limit test (Quantitative) included are for Total Bacterial Count and Total Fungal Count.

4. Results:

Table III - Macroscopic Description –

Tests	Results
Form	Kwatha
Colour	Grayish Brown
Taste	Bitter
Odour	Strong Aromatic

Table IV - Preliminary Phytochemical screening and Physiological screening –

Preliminary Phytochemical screening			Physiological screening	
Tests	Water	Alcohols	Tests	Results
Test for Proteins	Negative	Negative	Ash Value	6.43%
Test for Steroids	Negative	Positive	Acid insoluble Ash	0.19%
Test for Flavonoids	Positive	Negative	Water soluble extractive	22.32%
Test for Alkaloids	Positive	Negative	Alcohol soluble extractive	10.22%
Test for Tannins	Positive	Negative	pH	5.64

Table V - Test for specified Micro-Organisms (Qualitative) and Microbial limit test (Quantitative) –

Test for specified Micro-Organisms (Qualitative)		
Organisms	Limits (As Per IP)	Results
E coli	Absent/100ml	Absent
S aureus	Absent/100ml	Absent
P aeruginosa	Absent/100ml	Absent
S abony	Absent/100ml	Absent
Microbial limit test (Quantitative)		
Total Bacterial Count	30 - 300 cfu/ml	No growth
Total Fungal Count	10 - 100 cfu/ml	No growth

5. DISCUSSION:

PCOS is an endocrine disorder without any permanent cure. Paathadikwath is mentioned by Sushruta for vatakaphaja artvadusti. Paathadikwath contains Paatha (*Cissampelos pareira* Linn.), Shunthi (*Zingibar officinalis* Roxb.), Maricha (*Piper nigrum* Linn.), Pippali (*Piper longum* Linn.), and Kutaja (*Holarrhena antidysenterica* Roxb.ex. Fleming) in equal proportion. Prepared Paathadikwath when screened for parameters included for Physiological screening results for Ash Value is 6.43%, Acid insoluble Ash is 0.19%, Water soluble extractive is 22.32%, Alcohol soluble extractive is 10.22% and pH is 5.64. For Preliminary Phytochemical analysis screening parameters included are tests for Proteins, Steroids, Flavonoids, Alkaloids and Tannins in which for water extract Flavonoids, Alkaloids and Tannins are positive while Proteins and Steroids are negative. In alcoholic extract Steroids are positive while Proteins, Flavonoids, Alkaloids and Tannins are negative. Tests for specified Micro-Organisms (Qualitative) included are for organisms of E coli, S. aureus, P. aeruginosa and S. abony are seen absent. In Microbial limit test (Quantitative) included are for Total Bacterial Count and Total Fungal Count test shows no any growths. Flavonoids are polyphenolic secondary metabolite and tannins possess antioxidant and anti-inflammatory properties to manage oxidative stress and inflammation in PCOS cases. It is used to manage hormonal imbalance and improve insulin sensitivity. Alkaloids in the extract support hormonal modulation uses. The presence of steroids across multiple species underscores their potential role in reproductive health and endocrine regulation.

6. CONCLUSION:

Analysis of Phytochemical screening and Physiological screening of the Paathadikwath tests shows that as a polyherbal preparation ingredients of Paathadikwath is comparatively more enhanced in water soluble extractives than in alcoholic extracts. Laboratory tests demonstrates that prepared Paathadikwath is in accordance with the standards

mentioned in standards of Ayurvedic pharmacopeia of India. The synergistic combination of multiple bioactive compound classes creates comprehensive therapeutic profiles suitable for PCOS. Therapeutic effects can be expected from Paathadikwath when prepared freshly. The isolation and structural clarification of particular bioactive compounds, bioactivity assessment using pertinent pharmacological models, and clinical validation studies to create thorough safety and efficacy profiles should be the main goals of future research.

7. Conflict of Interest -Nil

8. Source of Support -None.

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