International Journal of Applied Ayurved Research ISSN: 2347- 6362

# PHARMACEUTICAL EVALUATION OF PHALATRIKADI KWATH

[1]Jena Sonalika

[1]PhD scholar, PG deptt. Of kayachikitsa, Gopabandhu. Ayurvedic.M ahavidyalaya,Puri,Odisha.

**ABSTRACT :**

*Phalatrikadi kwath* is an extensively used Ayurvedic formulation described in the context of *Prameha* by ancient Ayurvedic seers. In the present study the evaluation on analytic parameters were done on *Phalatrikadi kwath*. The organoleptic, physiochemical characteristics and quantitative estimation of functional group for the *kwatha* done and analytically the study reveals that the *Phalatrikadi kwath* can be effectively used in *Prameha*.

**Key words**: *Phalatrikadi kwath*, pH, TLC, florescent test.

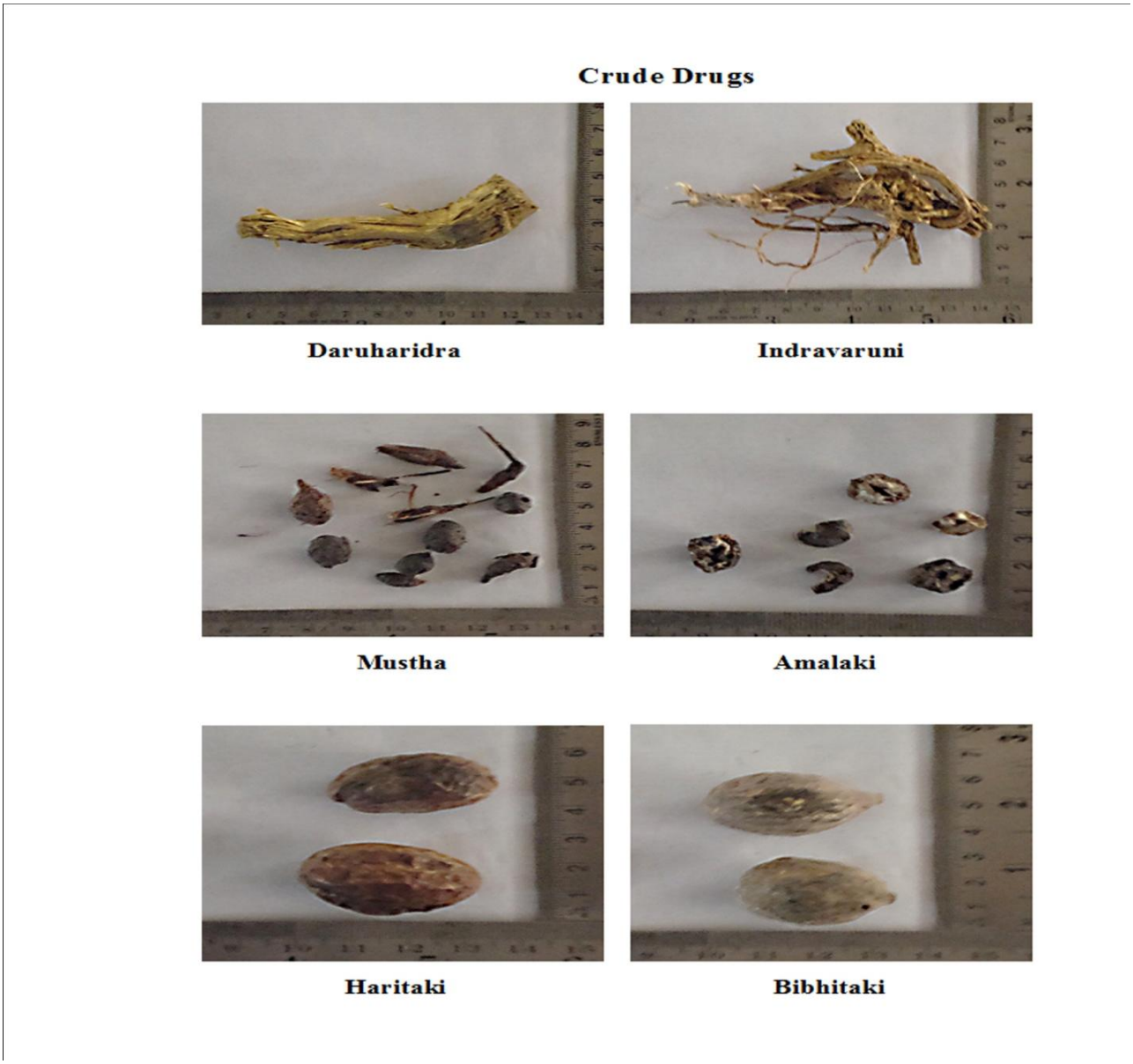
**INTRODUCTION:** *Phalatrikadi kwath* is a unique contribution of our ancient Ayurvedic seers. It is indeed an excellent combination of six drugs with a multi-dimensional action. This formulation has been mentioned in the context of *Prameha Chikitsa* in *Charak Samhita*[1, 2]. All the *drugs present in it are having Pramehaghna properties as well as having Kaphahara, Pittahara* & *Medohara* properties[2]. Hence helpful in *Samprapti Vighatan* of the disease. The *kwatha* contains *Triphala (Haritaki, Bibhitaki, Amalaki), Daruharidra,Indrayaan mula* & *Musta* and was prescribed along with honey and turmeric powder to get relief from *Prameha*[3].*Kwatha kalpana* is widely accepted for therapeutic purposes due to feasibility in preparation and convenience of administration. Therefore for establishing the rationality of its usage, present work has been carried out. Evaluation of *Phalatrikadi kwath* was done on the basis of pharmaceutical and analytical.

## MATERIALS AND METHODS:

**Pharmaceutical study:** Drugs for the preparation of *Phalatrikadi kwath* was collected from the local drug house. The raw samples were collected separately, packed in the polythene bags and labeled with name, part, place and date of collection. Samples of the raw drugs were shaded dried and subjected to pharmacognostical study for confirmation of the genuineness. *Phalatrikadi kwath* was prepared as per the reference of Charak Samhita, Prameha Chikitsa (37/17)[1]. The ratio of the ingredients has been shown in (Table no.1).The drugs were powdered individually in disintegrator and passed through mess no.8. Then required amount of potable drinking water was mixed with coarse powder in a stainless steel vessel and kept for overnight soaking (12hr). Next day, *kwatha* was prepared by applying constant mild heat until the volume reduced to 1/8$^{th}$ of the initial quantity. After desirable reduction of the volume, the *kwatha* was filtered through four folded cotton cloth and collected in a separate vessel. The residue remained above cloth was discarded.

**(Table no. 1)Ingredients of Phalatrikadi Kwatha**

| Sr.No | Drugs | Latin Name | Part used | Ratio |
|---|---|---|---|---|
| **1** | Haritaki | *Terminalia chebula* | Bark | 1 |
| **2** | Bibhitaki | *Terminalia Bellarica* | Bark | 1 |
| **3** | Amalaki | *Emblica officinalis* | Bark | 1 |
| **4** | Daruharidra | *Berberis aristata* | Bark | 1 |
| **5** | Visala/indrayaan mula | *Citrullus colocynthis/Tricosanthes palmate* | Bark | 1 |
| **6** | Musta | *Cyper rotundus* | Bark | 1 |



**Analytical Study:**The *Phalatrikadi kwatha* was analyzed by adopting various related analytical parameters like

**A. Organoleptic Characteristics**:Colour, odour, taste and appearance of *kwatha* were observed and mentioned in (Table no.2)

**(Table No. 2)**

| | |
|---|---|
| **Colour** | Greenish Dark Brown |
| **Odour** | Characteristic |
| **Taste** | Sour- astringent |

**B. Physiochemical Analysis:** Loss on drying at $110^0$c[4], ash value[5], water soluble ash, acid insoluble ash[6], pH value[7], specific gravity at $40^0$c[8]. Total solid content[9], total dissolved solid, suspended solid was carried out for raw materials and results are mentioned in (Table no.3)

**(Table No.3)**

| | |
|---|---|
| **Total ash** | 4.12% |
| **Water soluble ash** | 0.98% |
| **Acid insoluble ash** | 2.10% |
| **Total solid content** | 9.08% |
| **Total dissolved solid** | 5.18% |
| **Suspended solid** | 3.9% |
| **Specific gravity** | 1.0412 |
| **pH** | 4.40 ± 0.01 |



**C. Quantitative Test:**Tannin 32.54%

**D. Qualitative Test:**For various functional groups[10, 11] were done and observation and result of the *kwatha* was asserted in (Table no.4).

**(Table no.4)**

| | **Present/Absent (+/-)** | **Remarks (based on inference)** |
|---|---|---|
| **Carbohydrate** | + | Moderate |
| **Protein** | + | Traces |
| **Alkaloid** | + | Less |
| **Cardiac glycoside** | + | Traces |
| **Flavonoids** | + | Moderate |
| **Tannins** | + | Abundant |
| **Anthraquinone glycoside** | + | Moderate |
| **Steroids** | + | Abundant |
| **Triterpenoides** | + | Abundant |

**Quantitative analysis of some phytochemicals of crude drugs of Phalatrikadi Kwath**.

**Result:**

**Daruharidra**

Total Tannin: 1.52%

Total Alkaloids: 4.44%

**Indravaruni**

Total Tannin: 0.62%

Total flavonoids: 0.53%

**Musta**

Total Tannin: 2.85%

**Amalaki**

Total Tannin: 4.20%

**Haritaki**

Total Tannin: 63.75%

**Bibhitaki**

Total Tannin: 58.50%

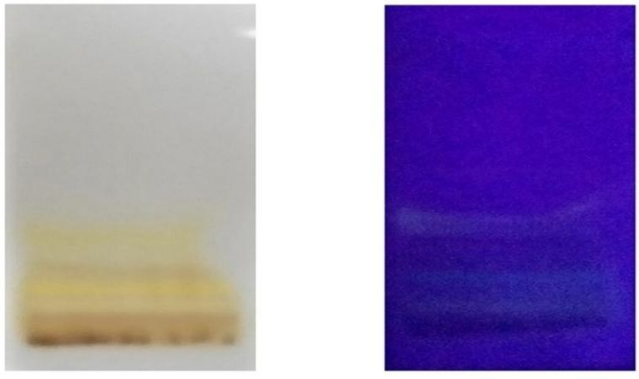
**TLC PROFILE:** Methanolic extracts[9] of *Phalatrikadi kwath*.

Chloroform**:** ethyl acetate**:** formic acid (2**:**5**:**2**:**0.8) was selected as solvent system. The developed plate was visualized under visible light and ultra violet. After spraying ferric chloride solution agent the Rf value are recorded in (Table no. 5 & Diagram1).

**Solvent System:** Chloroform: Ethyl acetate: formic acid: 2.5: 2: 0.8

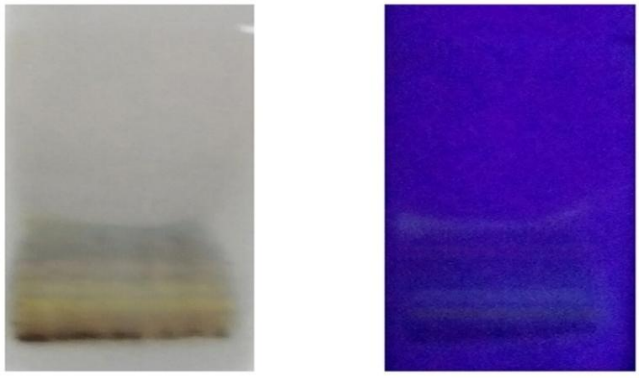
**Spraying Agent:** Ferric chloride solute

**Thin Layer Chromatography of Phalatrikadi Kwath**



Under Visible Light Under Long UV

**Before Derivatization**



Under Visible Light Under Long UV

**Before Derivatization**

**(Table no.5 ) Before spray**

| Rf | Visible Light. | UV |
|---|---|---|
| 0.06 | Pale yellowish-brown | Pale fluorescent green |
| 0.13 | Creamish-brown | Pale blue |
| 0.17 | Pale yellow | Pale blue |
| 0.21 | Yellow | Purple blue |
| 0.31 | Lemon yellow | Blue |
| 0.33 | Pale yellow | Bright fluorescent yellow |
| 0.38 | Pale purple | Pale yellow |

**After spray**

| Rf | Visible Light | UV |
|---|---|---|
| 0.06 | Creamish-green | Pale fluorescent green |
| 0.13 | Pale yellow | Pale blue |
| 0.17 | Pale yellow | Pale blue |
| 0.21 | Mud brown | Gray blue |
| 0.31 | Pale greenish blue | Pale greenish blue |
| 0.33 | Pale blue | Fluorescent greenish yellow |

**Fluorescent Tests**

| | Under Visible Light | Under Long UV |
|---|---|---|
| Sample | Greenish brown | Dark brown |
| Sample + water | Yellow Pale | greenish-white |
| Sample + MeOH | Lemon yellow | Bright lemon yellow |
| Sample + NaOH | Dark brown | Greenish yellow |
| Sample + HCl | Brown | Yellow |
| Sample + $HNO_3$ | ReddishBrown | Yellowish brown |
| Sample + $H_2SO_4$ | Reddish brown | Yellowish brown |
| Sample + $NH_3$ | Yellowish brown | Bright yellow |

**DISCUSSION:** *Kwatha* is an aqueous solution containing the properties of substance or substances that have been processed in it[12]. The purpose of herbal decoction is to extract the water soluble constituents of herbs by boiling. Quantum of heat and duration of heating are prime concern for preparation of decoction[13].Soaking of raw materials results in the softening of drug due to diffusion of liquid in to the raw materials because of osmosis[13]. Due to the presence of hydroxyl group, the raw materials swell, which results in the increased diffusion pressure inside the cell wall[14]. There by ultimately blurting of the cell wall. Continuous heating and agitation during the preparation of decoction enhances the extraction process by weakening the bonds and there by separating the hydrophobic substances from hydrophilic substances[13]. The water diffuses into the raw material, dissolves the water soluble constituents & discharges it to the liquid media due to collapse of the cell wall.

Thus transfer of water soluble principal into the solvent (water) is achieved.

Total Ash value of the *kwatha* was 4.12% shows the presence of inorganic matter in the drugs. Water soluble ash was very less that is 0.98% which shows that drugs were well good for preparation of the *kwatha*. Total solid content was 9.08% in which 5.18% was dissolved and 3.9% was suspended which reveals that the *kwatha* was well prepared. Specific gravity was 1.0412 and pH was 4.40±0.01 which is favorable for early absorption in the stomach as it remains acidic.

Qualitative analysis reveals that Tannins, Steroids, Triterpenoids were found abundantly. Whereas flavonoid & carbohydrates were found in moderate amount, which have received considerable attention as health promoting component in various plants food & several studies have responded on its nutriceutical properties. The condensed tannin extracts showed promising anti diabetic effects. On quantitative test abundant (32.54%) Tannin was found .Organoleptic characters of the *Phalatrikadi kwatha* reveals that the colour of the *kwatha* was greenish dark brown, odour was characteristic and taste was sour astringent which was palliable for internal use.TLC shows presence of more chemical moieties and functional components in the *kwatha*.

**CONCLUSION:** On account of analytical study it can be concluded that the *Phaltrkadi Kwath* is rich in functional component. More amount of tannin was also found. Thus it can be concluded that the *Phalatrikadi Kwath* is a good antidiabetic drug.

## REFERENCES

1. *Agnivesha*, *Prameha chikitsa* 6/40, *Charak Samhita*, part II, Chaukahamba Bharti Academy, Varanasi 2011:240.

2. Govinda Das Prameha Chikitsa 37/17 Bhaisajya Ratnavali, Chaukhambha Prakasan Varansi, Reprint 2009;502.

3.Bhaisajya Ratnavali, By prof Siddhinandan Mishra-Prameha Roga Adhikar(37 chap),slok no 17.

4. Anonymus, the Ayurvedic Pharmacopiea of India, ministry of Health & Family Welfare, Gov Of India, partI, Vol.IV, Ist Edition, 2004, Appendix-2.2.9.

5. Anonymus, the Ayurvedic Pharmacopiea of India, ministry of Health & Family Welfare, Gov Of India, partI, Vol.IV, Ist Edition, 2004, Appendix-2.2.3.

6. Anonymus, the Ayurvedic Pharmacopiea of India, ministry of Health & Family Welfare, Gov Of India, partI, Vol.IV, Ist Edition, 2004, Appendix-2.2.4.

7. Anonymus, the Ayurvedic Pharmacopiea of India, ministry of Health & Family Welfare, Gov Of India, partI, Vol I, Ist edition-1999, Appendix-3.3.

8. Anonymus, the Ayurvedic Pharmacopiea of India, ministry of Health & Family Welfare, Gov Of India, partI, Vol IV, Ist Edition,2004,Appendix 3.1.3

9. Anonymus, the Ayurvedic Pharmacopiea of India, ministry of Health & Family Welfare, Gov Of India, partI, Vol V, Ist Edition-1999, Appendix 3.3.8..

10. Baxi A.J, Shukla, V,J, Bhatt U.B, Methods of Qualitative testing of some Ayurvedic formulations, Gujrat Ayurved University, Jamnagar, 2001

11.Khandelwal K.R, Practical Pharmacognosy Tachniques & Experimental,Nirali prakasan, 2001.

12. Remington, the Science & Practice of Pharmacy, 21st edition, Vol.1, Chapter 39, Page 773.

13.Manish Vyash et al.An unique Concentrated & Fermented Dosage form i.e, pravahi kwatha, International Journal of

pharmaceutical & Biological Archives,jul-Aug2010 Vol-1.
14. Remington, the Science & Practice of Pharmacy, 21st edition, Vol.1, Chapter 16, Page 773.

**Corresponding Author:**Dr.Sonalika Jena,PhD scholar, PG deptt of kayachikitsa,Gopabandhu.Ayurvedic.Mahavidyalaya,Puri,Odisha
Email-drsonalikajena@gmail.com

Source of support:Nil
Conflict of Interest: None Declared