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EVALUATION OF SOME PHYSIOCHEMICAL PROPERTIES AS QUALITY CONTROL PARAMETERS OF AN AYURVEDIC PREPERATION - *PHALATRIKADI KWATHA*

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ABSTRACT

INTRODUCTION: *Phalatrikadi kwatha* is purely herbal formulation mentioned for the treatment of *Pandu, Kamala* from the ancient periods mainly Chakradatta. It is orally administrable pharmaceutical drug combination of eight drugs mainly *Amalaki (Emblica officinalis), Haritaki (Terminalia chebula), Bibhitaki (Terminalia bellirica), Amruta (Tinospora cordifolia), Bhunimba (Andrographis paniculate), Kutaki (Picrorhiza kurroa), Vasa (Adhatoda vasica), Nimba (Azadirachta indica*).This work was done to standardize the finished product of *Phalatrikadi kashaya.*

Aim : to make standardization of *Phalatrikadi Kashaya* by analyzing through qualitative and quantitative analysis and by using Physico-chemical parameters and stability study.

Methodology: *Phalatrikadi kashaya* was prepared according to standard procedure of *kashaya Kalpana* and analyzed for physiochemical parameters, qualitative analysis. quantitative analysis or stability test.

Results: The data results to maintain the quality of formulation of *Phalatrikadi Kashaya.*

Conclusion: This study may be considered for the development of standard parameters for the formulation.

Keywords:*Pandu, Phalatrikadi kwatha*, Anemia, physiochemical parameters.

INTRODUCTION: A broad definition given in ancient literature is medicinal plants and all parts of plants to be potential sources of medicinal substances.[1] However, an obstacle which has to restrict the acceptance of the alternative medicines in the developed countries is the lack of documentation and quality control. There is a need for documentation, it becomes extremely important to make an effort toward standardization of the polyherbal medicines.

In Ayurveda *Kwatha* (decoction) is widely used liquid dosage forms and it is one among the five basic *kalpanas* (pharmaceutical processing)[2]. *Kwatha* having many disadvantages like short shelf life, inconvenience to prepare at every time before consumption. So firstly it freshly prepared then it has preserved with standard amount of preservatives, it helps to increase the shelf life and no need to prepare everytime.

Phalatrikadi Kwatha consists of drugs like *Amalaki, Haritaki, Bibhitaki, Nimba, Bhunimba, Katuki, Amruta, Vasa* is mentioned in, *Chakradatta*[3], *Bhaisjya Ratnavali*, AFI as benificial in all type of PANDU. *Mandagni* is the main cause for *Pandu Roga*. Most of the drugs in this formulation having *Tridoshahara* properties and *Deepana, Pachana, Rasayana, Shonitasthapana, Anulomana* property. So the drug may be helpful to treat mandagni and promotes *dhatuagni*. As a result *dhatupushti* will occurs.

In this era people more depends on ready-made products thus need detailed evaluation and standardization of ayurvedic formulations to bring uniformity in finished products. It helps to face the challenges and to be accepted in international market. An analytical procedure done to evaluate some physiochemical property as quality control, it helps to provide evidences for its shelf life, purity, identity, substantiate the strength of finished products.

AIM OF THE STUDY: To prepare the *Phalatrikadi kwatha* to standardize it on the basis of organoleptic and phsico-chemical parameters.

MATERIALS AND METHODS:

Collection, Identification, authentication of raw drugs and preparation of finished products.

In this study one batch of *Phalatrikadi Kashaya* was prepared in Good manufacturing practice (GMP) certified KLE Ayurveda Pharmacy, Belagavi. and studied for organoleptic parameters, physiochemical parameters, qualitative analysis, microbial load was done in central research facility, KAHER,s Shri B.M.K. Ayurveda Mahavidyalaya.. The raw drug procured from Good manufacturing practice (GMP) certified KLE Ayurveda Pharmacy, Belagavi. The ingredients were identified and authenticated in the department of Drava guna KAHER's Shri B.M.K. Ayurveda Mahavidyalaya, Belagavi.

Table No.- 1 Details Of Ingredients

Sanskrit Name	**Latin Name**			**Family**	**Official Part**	**Praportion**
Amalaki[4]	*Emblica*	*officinalis*	Gaertn.	Euphorbiaceae	Pericarp	1 part
Haritaki[5]	*Terminalia*	*Chebula*	Retz.	Combretaceae	Pericarp	
Bibhitaki[6]	*Terminalia*	*Bellirica*	Roxb.	Combretaceae	Pericarp	
Amruta[7]	*Tinospora*	*Cordifolia*	Willd.	Menispermaceae	Stem	1 part
Vasa[8]	*Adhatoda*	*Vasica*	Nees.	Acanthaceae	Root	1part
Tikta[9]	*Picrorthiza*	*Kurroa*	Royle ex. Benth	Scrophulariaceae	Rhizome	1 part
Bhunimba[10]	*Andrographis*	*Paniculata*	(Burm B.)Wall ex. Nees	Acanthaceae	Whole plant	1 part

Nimba[11]	*Azadirachta*	*Indica*	A. Juss	Meliaceae	Stem bark	1 part

TABLE NO 2 : PHARMACODYNAMICS OF DRUGS

S. No.	Drug	*Rasa*	*Veerya*	*Vipaka*	*Guna*	*Karma*
1.	*Amalaki*	*Panchrasa except lavana*	Sita	*Madhura*	*Ruksha, Laghu*	*Tridoshara, Rakta prasadana, Raktastambaka*
2.	*Haritaki*	*Panchrasa except lavana*	Usna	*Madhura*	*Ruksa, laghu*	*Tridoshara, Rasayana, Krimihara, Dipana, Pacana, Anulomana*
3.	*Bibhitaki*	*Panchrasa except lavana*	*Usna*	*Madhura*	*Ruksa, laghu*	*Kaphapitthara, Krimighana, Dipana, Raktastambhaka, Raktashodaka*
4.	*Amruta*	*Tikta, Kasaya*	*Usna*	*Madhura*	*Laghu*	*Tridoshara, Dipana, Pacana, Rasayana, Raktasodaka, Raktavardhaka*
5.	*Vasa*	*Tikta, Kasaya*	*Sita*	*Katu*	*Laghu, Snigdha*	*Raktasodhaka, Pittakaphara, Raktastambhaka, Raktasamgrhika*
6.	*Tikta*	*Tikta, katu*	*Usna*	*Katu*	*Laghu*	*Dipana, Pittahara, Krimighana, Vakriduttejaka, Raktashodaka*
7.	*Bhunimba*	*Tikta*	*Usna*	*Katu*	*Laghu, Ruksha*	*Kaphapittahara, Krimighana, Raktashodaka, Vakriduttejaka*
8.	*Nimba*	*Tikta, Ruksha*	*Sita*	*Katu*	*Laghu*	*Pittanasaka, Grahi, Raktashodaka, Krimighana, Yakriduttejaka*

METHOD OF PREPARATION:

1) 1 part of each above mentioned raw materials are taken.
2) All the raw materials are made in to course powder.
3) To this, 8 parts of water is added and kept soaking for whole night.
4) Next day morning it was boiled on *madhyama agni* till it reduce to 1/4th part.
5) Then it was allowed to cool and filter.
6) After this required quantity of Sodium benzoate, Propyl paraben, and Methyl paraben added as preservatives.

TABLE NO. 3 : INGRADIENTS OF *PHALATRIKADI KWATHA* (FOR 1 LTR)

Drugs	Quantity
Amalaki	83.3 gms (27.7 gms each)
Haritaki	
Bibhitaki	
Amruta	83.3 gms
Vasa	83.3 gms
Tikta	83.3 gms
Bhunimba	83.3 gms
Nimba	83.3 gms
Sodium benzoate	0.1 gms
Propyl paraben	0.4 gms
Methyl paraben	0.4 gms

ANALYTICAL STUDY OF TRIAL DRUG:

The trial drug sample was subjected to various physiochemical analytical tests to evaluate the standards of drug and stability of drug after adding the preservative. Analytical test reports of the trial drug *Phalatrikadi kwatha* are as follows-

NATURE OF PREPARATION :*Kwatha* (liquid)

ORGANOLEPTIC PARAMETERS:

Colour - Brown

Odour - Fragrent

Taste – Bitter

TABLE NO. - 4 PHYSIOCHEMICAL PARAMETERS:-

pH	**4***
Specific gravity	**1.028***
Total solid	**7.762***

***These value are the mean value of freshly prepared 3 samples**

STABILITY

Test for microbial load of the kwatha – Done (stable upto 1year)

TABLE NO. 5 Macroscopic description: month (0^{th},1^{st},2^{nd} , 3^{rd} , 4^{th} , 5^{th} , 6^{th}) or at 1 year

Sr. no	Organism	Limits(as per IP)	Results
1.	**E. coli**	**Absent/100 ml**	**Absent**
2.	**S. aureus**	**Absent/100ml**	**Absent**
3.	**P. aeruginosa**	**Absent/100 ml**	**Absent**
4.	**S. abony**	**Absent/100 ml**	**Absent**
5.	**Total bacterial count**	**30 – 300 cfu/ml**	**WNL/ml**
6.	**Total fungal count**	**10 -100 cfu/ml**	**WNL/ml**

QUALITATIVE ANALYSIS:- TABLE NO. – 5 TESTS FOR INORGANIC COMPOUNDS

Calcium	**Present**
Magnesium	**Absent**
Sodium	**Present**
Potassium	**Absent**
Iron	**Present**
Chloride	**Present**
Sulphates	**Present**
Carbonates	**Absent**
Nitrates	**Present**
Phosphate	**Present**

TABLE NO – 6 TESTS FOR ORGANIC COMPOUNDS:-

Carbohydrates	**Positive**
Reducing sugar	**Positive**
Monosaccharides	**Negative**
Pentose sugar	**Negative**
Proteins	**Positive**
Amino acid	**Positive**
Steroids	**Positive**
Flavonoids	**Positive**
Hexose	**Negative**
Alkaloids	**Positive**
Tannins	**Positive**
TESTS FOR GLYCOSIDES	
Cardiac glycosides	**Negative**
Anthraquinone glycosides	**Positive**
Saponin glycosides	**Positive**

METHOD OF ADMINISTRATION:- Take appropriate amount of *kwatha* according to the age for 30 days orally twice a day with honey as a *anupana*.

DISCUSSION :*PANDU* is *Pitta Pradhan tridoshaja vyadhi* most of the ingredient having combined effect of *tridoshahara* property. In *Pandu* decrease in appetite commonly present *Kwath* ingredient also posses *deepana*, *pacana* property due most of them having *tikta rasa* which help to increase appetite, stimulate gastric secretions. Blood loss occur due to worm infestation which causing anemia most of the ingredient of *phalatrikadi kwatha* having *krimihara* property. *Kwatha* contain iron which is essential for haem part of haemoglobin. In *pandu* there is sign of *daurbalyata* and fatigue which may be due to inadequate amount of iron which results into inadequate amount haemoglobin production. It contain protien

and aminoacid which is required for protein part of haemoglobin. It also contain copper which is helpful in iron absorbtion from gastrointestinal tract. *Amalaki* contains vitamin C which is essential for the formation hemoglobin.

CONCLUSION:

The study reveals that sufficient quality control parameters were followed during the preparation of formulation. Organoleptic parameters, physicochemical analysis and microbial overload analysis were carried out in the finished product indicates the genuineness of final product.The data evolved in the present study will be very useful for routine quality control of *phalatrikadi kwatha* and also to control the batch to batch variation. Further studies should be carried out with huge samples of different batches to standardize the formulation. Further studies also done to check the stablity upto 1to 2 years. Pharmacological and clinical studies should be carried out to re-establish the ancient knowledge with modern scientific parameters.

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