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PHARMACEUTICO- ANALYTICAL STUDY OF KINVA CHURNA

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ABSTRACT

standardization is essential to maintain the therapeutic efficacy, purity, and uniformity of active components in herbal formulations. *Kinva* is an important residue with various biological properties obtained after filtration of the final product of fermentation is called *surabeeja* or *kinva* which is commonly discarded but, it is *vatahara, shothahara, ushnaveerya* and helps *sandhigata vata* and mentioned as *upanaha* drug used in *janu sandhigata vata* (Knee Osteoarthritis). **Objectives:** To do Pharmaceutico-Analytical study of *Kinva Churna* of *amrutarishta*. **Methods:** *Amrutarishta Kinva* was collected from GMP Certified pharmacy and the analytical part incorporates Preliminary phytochemicals and Total Tannins and Flavonoids for quantifying essential minerals and metals [Flame Photometry]. **Results:** The study underscores the potential therapeutic benefits of *kinva churna,* attributing its efficacy to steroids, alkaloids, tannins, and flavonoids in *janu sandhigata vata*, anti-inflammatory and antioxidant effects. **Conclusion**: Kinva is indicated in janu sandhigata vata as upanaha Dravya. The results of the pharmaceutical and analytical study can be considered preliminary standards for the Kinva churna.

Key Words: Kinva churna, Phytochemical, Ayurveda, Janu sandhigata vata

INTRODUCTION:

Standardizing herbal medications involves developing technical standards and conducting studies to obtain reliable qualitative and quantitative values, ensuring safety, quality, and reproducibility. This process identifies specific properties of the medication, making standardization a key tool for quality assurance **[1]**. Herbal medications frequently have more than one active ingredient, and it's not always clear what the particular active ingredient is **[2]**. Despite these challenges, standardization is essential to maintain the therapeutic efficacy, purity, and uniformity of active components in herbal formulations. *Kinva churna* is residual of (*Asava and Arishta*) Alcoholic preparations used for *upanaha sweda* **[3]**. *Upanaha* is commonly practiced topical treatment which can be easily adapted with changing time, without compromising its efficacy. *Kinva* is one of *upanaha Dravya* **[3]** and it is observed that most of the *Ayurveda* pharmacies discard though it is *vatahara, shothahara, ushnaveerya* and helps *sandhigata vata* **[4]**. Recent researches concluded OA is low grade inflammatory joint disease in particular of synovitis **[5]**. Since no standards were found in the literature review for *Kinva churna*, the current study was initiated to develop standards for the *Kinva churna*.

OBJECTIVES:

To do analysis of *Amrutarishta Kinva Churna*.

MATERIAL AND METHODS:

Kinva of *Amrutarishta* is collected from GMP Certified, KLE Ayurveda Pharmacy, Khasbag Belagavi, and then it is shade dried and powdered in pulverizer then packed into air tight packets after sieving by sieve no 8. Analysis is done at KAHER's Shri B.M.Kankanwadi Ayurveda Mahavidhyalaya. Central Research Facility (AYUSH Approved ASU Drug Testing Laboratory LIC.No.TL-8/2011).

Analytical Part (Quality Evaluation Parameters):

a) Preliminary Phytochemical Screening (Qualitative Analysis): Done by as per SOP.[6]

b) Pharmaceutical Antioxidant: (Quantification of Phytochemicals)

Tests for Total Flavonoids:

Total flavonoid content of plant was determined by Aluminium chloride colorimetric method quercetin was used as standard.

Brief protocol:

Quercetin was used to make the calibration curve by dissolved in methanol/Ethanol and then diluted to 6.25-200 µg/ml of serial

concentrations. Stock Solution of Extracts(1mg/ml) was prepared with methanol/Ethanol. Reaction Solutions of 10 ml contained: Sample extract stock solution/ (quercetin standard) to which Methanol, 10% Aluminium Chloride, IM Potassium Acetate solution and distilled water and were added and mixed well. Sample blank was prepared in similar way by replacing Aluminium chloride with distilled water. Sample and standard absorbance was measured at 420 nm with a Shimadzu UV-1800 spectrophotometer. Calibration curve using ABSORBANCE vs CONCENTRATION of Quercetin standard was prepared and the concentration of total flavonoid in the sample was determined by using a slope equation that was obtained from the standard graph and results for total flavonoids was expressed as mg of quercetin equivalent /gm dried extracted **[7]**.

c) Quantification Test for Metals & Minerals (Flame Photometry):

Potassium & calcium Standard sample & test sample were prepared freshly with dist. water. The flame of the photometer was calibrated by adjusting the air & gas then the flame is allowed to stabilize for nearly 4 min. Standard solution was sprayed 3 times & reading was noted. After that sample solution was sprayed 3 times & recorded **[8]**.

RESULTS:

Organoleptic Characters:

Form: Powder

Colour: Brownish

Odor: Characteristic smell

1) Physico-chemical standards:

Table 1: Physicochemical property of *Kinva*	
Test Parameter	**Result**
Loss on drying	**10.203%**
Water soluble Extract	**54.400%**
Alcohol soluble Extract	**41.280%**
Ph Value (5% solution)	**4.53**

2) Tests for specified Micro-Organisms (Qualitative)

Table 2: Specified Micro – Organisms in *Kinva*		
Specified Micro – Organism	**Limits (As per IP)**	**Results**
E Coil	**Absent/100ml**	**Absent**
S aureus	**Absent/100ml**	**Absent**
P aeruginosa	**Absent/100ml**	**Absent**
S abony	**Absent/100ml**	**Absent**
Microbial Limit Test for *Kinva*		
Specified Micro – Organism	**Limits (As per IP)**	**Results**
Total Bacteria Count	**30-300cfu/ml**	**49 cfu/ml**
Total Fungal Count	**10-100cfu/ml**	**06 cfu/ml**

3) Tests for Phytochemical Screening (Qualitative)

Table 3: Phytochemical Screening of *Kinva Churna*					
Tests	**Alcohol Extract**	**Water Extract**	**Tests**	**Alcohol Extract**	**Water Extract**
Carbohydrates	**Detected**	**Not Detected**	**Steroids**	**Detected**	**Detected**
Reducing sugar	**Detected**	**Detected**	**Flavonoids**	**Detected**	**Detected**
Monosaccharides	**Not Detected**	**Not Detected**	**Alkaloids**	**Detected**	**Not Detected**
Pentose Sugar	**Detected**	**Not Detected**	**Tannins**	**Not Detected**	**Not Detected**
Proteins	**Not Detected**	**Not Detected**	**Cardiac Glycosides**	**Detected**	**Detected**
Amino Acids	**Not Detected**	**Not Detected**	**Anthraquinone Glycosides**	**Detected**	**Detected**

3) Total Flavonoids: Alcohol Extract was (29.06±0.68) mg QE/gram of Extract and Water Extract was (3.86±0.17) mg QE/gram of Extract

4) Thin Layer Chromatography Profile:

Alcoholic extract was subjected to TLC analysis using solvent ethyl acetate. The Rf values of the resolved components were determined and detailed results of number of components present are given in **Table 4**.

Table 4: Thin Layer Chromatography Rf Values

Type of extract	Short waves Rf values	Long Waves Rf Values
Alcoholic	**0.06,0.13,0.24,0.042,0.61,0.72,0.85,0.93**	**0.06,0.12,0.16,0.41,0.49,0.73,0.80,0.84,0.86,0.89,0.93,0.98**

DISCUSSION:

Kinva is an important residue with various biological properties obtained after filtration of the final product of fermentation is called *surabeeja* or *kinva* which is dried and stored for furtheruse **[9]**. Quality decided the efficacy of the product. The present study reveals that major phytochemicals detected as Flavonoids, Cardiac Glycosides, Carbohydrates along with alkaloids, steroids etc in 5 gm per 100 ml of ethanolic & water extract, that reveals that *kinva* is having efficacy through alkaloid as antimicrobial & flavonoids wound healer and anti-inflammatory agent, carbohydrate & reducing sugar as energy source and soothing effect on the localize tissue.

Flavonoid's role in Janu sandhigata vata:

Flavonoids are naturally occurring polyphenols having anti-oxidant properties and anti-inflammatory properties **[10]**. Because of Lipophilic property of flavonoids, they are readily absorbed by cutaneous route and this route is the best delivery approach for flavonoids **[11]**. Studies revealed that the flavonoids interfere the production of various pro-inflammatory cytokines by blocking nuclear factor kappa B translation via COX-2 synthesis **[12]**.

Role of Electrolytes in Janusandhigata vata:

Calcium & Potassium quantification reveals that these electrolytes may helping Potassium (K+) for electrolyte balance & calcium as nerve conduction along with muscle strength

enhancer **[13]**.

CONCLUSION:

Kinva is residue and is discarded by most of the pharmacies but this can become an economical and potent *upanaha* drug and the data obtained quality control studies of *Kinva churna* can be taken as in-house standard for quality evaluation.

Conflicts of Interest: The authors declare that there is no conflict of interest.

Author Contribution:

Dr. Kavita B S involved in the collection of data. Analysis, interpretation of the data was done by

both the authors. Manuscript drafting was done by Dr. Kavita B S, and review, correction of manuscript was done by Dr. Pradeep L Grampurohit and Dr. Savita Bhosale. Approval from all

the authors were provided for the submitted manuscript.

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