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# A PHARMACUETICO-ANALYTICAL REVIEW OF JWARAHARA PROPERTY OF NIMBADI CHURNA

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## ABSTRACT

*Panchavidha Kashaya kalpanas* are the fundamental preparations of *bhaishajya Kalpana*[1]. Some of the authors have considered *churna* as one among the *Kashaya kalpanas*. *Churna* is nothing but powdered form of raw drugs which can contain both herbal and herbo mineral components[2]. it is one of the most common dosage forms in day-to-day practice. *Nimbadi churna* contains drugs of herbal origin which was methodically prepared and analytical study of the same was done. Animal experiment was done using *Nimbadi churna* on wistar albino rats for fever study.

**Key words:** *Nimbadi churna*, pharmaceutical study, analytical study.

## INTRODUCTION

*Churna Kalpana* is one among the most important *kalpanas* because of its efficacy, easy method of preparation and potency. It is nothing but powdered form of crude drugs which can be both of herbal and herbo-mineral origin. *Nimbadi churna* has been explained under *churna Kalpana of sahasrayoga*[3]. *Jwara* has been mentioned as one among one of the many conditions where *Nimbadi churna* can be therapeutically used. Most of the drugs used in the preparation of *Nimbadi churna* contains *tikta rasa pradhana* and *katu Kashaya anurasa dravyas* which has *jwarahara* property. The prepared *churna* is preserved in airtight

containers. A study was undertaken to evaluate the *jwarahara* property of methodically prepared *Nimbadi churna*.

**AIMS AND OBJECTIVES:**

1. To prepare *Nimbadi churna* as per classical reference.
2. To conduct pharmaceutical and analytical review of *Nimbadi churna*.

**MATERIALS AND METHODS:**

*Churna Kalpana* is a formulation of powdered herbal or herbo-mineral drugs. It is widely used as a dosage form in present practice. It is a *Kalpana* which is an oral dosage form on its own and also widely used as a base in many other dosage forms like *Kashayas, aristas, vati* etc. It will have the colour, odour and taste of the drugs used. In this part of the study, a detailed description about various practical steps done for the preparation of *Nimbadi churna* as per the classical text.

**Drug preparation:**

Collection of raw materials:

The ingredients required for the preparation of *Nimbadi churna* was procured from the local markets of Mangalore city. It was further identified as genuine by the *dravyaguna* department of Karnataka ayurveda medical college, Mangalore.

Preparation of *churna:*

The following drugs were procured in below said quantity, were processed into fine powder form and were collected in airtight container according to the general method of preparation of *churna* mentioned in *sharangadhara Samhita*.[4]

| | |
|---|---|
| *Bhunimba* | 1 part |
| *Katuki* | 1 part |
| *Musta* | 1 part |
| *Maricha* | 1 part |
| *Pippali* | 1 part |
| *Shunti* | 1 part |
| *Indrayava* | 1 part |
| *Chitraka* | 2 parts |
| *kutaja* | 16 parts |

**OBSERVATION:**

1. *Nimbadi churna* prepared as per classics is brown in colour.
2. Strong pungent odour of the drugs was perceived.
3. While preparing the *churna*, one should be careful with gloves and face mask since it contains t*eekshna* drugs.
4. Final product obtained was tikta rasa *pradhana along* with *katu as anurasa*.

**ANALYTIAL STUDY:**

**Organoleptic characters**

Color, odor and taste of sample are noted using sensory organs.

**Powder microscopy**

A pinch of the sample was mounted on a microscopic slide with a drop of glycerine-water. Characters were observed using Zeiss AXIO trinocular microscope attached with Zeiss Axio Cam camera under bright field light. Magnifications of the figures are indicated by the pre-calibrated scale-bars using Zeiss Axio Vision software.

**Loss on drying at 105ºC.**

10 g of sample was placed in tared evaporating dish. It was dried at 105˚C for 5 hours in hot air oven and weighed. The drying was continued until difference between two successive weights was not more than 0.01 after cooling in desiccator. Percentage of moisture was calculated with reference to weight of the sample.

**Total Ash**

2 g of sample was incinerated in a tared platinum crucible at temperature not exceeding 450˚C until carbon free ash is obtained. Percentage of ash was calculated with reference to weight of the sample.

**Acid insoluble Ash**

To the crucible containing total ash, add 25ml of dilute HCl and boil. Collect the insoluble matter on ashless filter paper (Whatmann 41) and wash with hot water until the filtrate is neutral. Transfer the filter

paper containing the insoluble matter to the original crucible, dry on a hot plate and ignite to constant weight. Allow the residue to cool in suitable desiccator for 30 mins and weigh without delay. Calculate the content of acid insoluble ash with reference to the air-dried drug.

**Water soluble ash**

Boil the ash for 5 min with 25 ml of water; collect insoluble matter on an ashless filter paper, wash with hot water, and ignite for 15 min at a temperature not exceeding 450˚C. Subtract the weight of the insoluble matter from the weight of the ash; the difference in weight represents the water-soluble ash with reference to the air-dried sample.

**Alcohol soluble extractive**

Weigh accurately 4 g of the sample in a glass stoppered flask. Add 100 ml of distilled Alcohol (approximately 95%). Shake occasionally for 6 hours. Allow to stand for 18 hours. Filter rapidly taking care not to lose any solvent. Pipette out 25ml of the filtrate in a pre-weighed 100 ml beaker. Evaporate to dryness on a water bath. Keep it in an air oven at 105°C for 6 hours, cool in desiccator for 30 minutes and weigh. Calculate the percentage of Alcohol extractable matter of the sample. Repeat the experiment twice and take the average value.

**Water soluble extractive**

Weigh accurately 4 g of the sample in a glass stoppered flask. Add 100 ml of distilled water, shake occasionally for 6 hours. Allow to stand for 18 hours. Filter rapidly taking care not to lose any solvent. Pipette out 25ml of the filtrate in a pre-weighed 100 ml beaker. Evaporate to dryness on a water bath. Keep it in an air oven at 105°C for 6 hours. Cool in a desiccator and weigh.

Repeat the experiment twice. Take the average value.

**Determination of pH**

*Preparation of buffer solutions:*

Standard buffer solution: Dissolved one tablet of pH 4, 7 and 9.2 in 100 ml of distilled water.

*Determination of pH:* 1 ml of sample was taken and make up to 10 ml with distilled water, stirred well and filtered. The filtrate was used for the experiment. Instrument was switched on. 30 minutes time was given for warming pH meter. The pH 4 solution was first introduced, and the pH adjusted by using the knob to 4.02 for room temperature 30°C. The pH 7 solution was introduced, and the pH meter adjusted to 7 by using the knob. Introduced the pH 9.2 solution and checked the pH reading without adjusting the knob. Then the sample solution was introduced, and reading was noted. Repeated the test four times and the average reading were taken as result.

**Bulk density**

Bulk density is the volume occupied by the given amount of formulation measured as wt/vol.

**Tapped bulk density.**

It is the volume occupied by the given amount of formulation measured as wt/vol after 50 tapping's.

**Angle of repose**

| Flow Property | Angle of repose (degrees) |
|---|---|
| Excellent | 25–30 |
| Good | 31–35 |
| Fair aid not needed | 36–40 |
| Passable—may hang up | 41–45 |
| Poor—must agitate, vibrate | 46–55 |
| Very poor | 56–65 |
| Very, very poor | >66 |

**Haussners ratio**

$HR = V_0/V_f$

**Compressibility index**

$$CI = \rho tapped - \rho bulk / \rho tapped \times 100$$

**Scale of Flowability**

| Compressibility Index (%) | Flow character | Hausner's ratio |
|---|---|---|
| 10 | Excellent | 1.00–1.11 |
| 11-15 | Good | 1.12-1.18 |
| 16-20 | Fair | 1.19-1.25 |
| 21-25 | Passable | 1.26-1.34 |
| 26-31 | Poor | 1.35-1.45 |
| 32-37 | Very poor | 1.46-1.59 |
| >38 | Very poor | >1.60 |

**HPTLC**

1.0g of **Nimbadi churna** was suspended in 10.0ml ethanol filtered after 24hrs. 4, 8 and 12µl of each of the above extract was applied on a pre-coated silica gel $F_{254}$ on aluminium plates to a band width of 7mm using Linomat 5 TLC applicator. The plate was developed under **Cyclohexane: Chloroform: Diethyl ether (7:2:1)**. The developed plates were visualized in short UV, long UV, White light and then scanned at 254nm, 366nm, derivatised with Dragendroff's reagent subsequently scanned at 620nm. Rf, colour of the spots, densitometric scan and 3-D chromatograms were recorded.

**Table 2. Results of standardization parameters of Nimbadi churna**

| Parameter | Results n = 3 (%w/w) (Avg ± SD) |
|---|---|
| Loss on drying | 9.86±0.01 |
| Total Ash | 7.53±0.50 |
| Acid Insoluble Ash | 0.58±0.01 |
| Water soluble Ash | 2.88±0.01 |
| Alcohol soluble extractive value | 8.79±0.01 |
| Water soluble extractive value | 15.41±0.02 |
| pH | 6.0 |

## DISCUSSION

1. Procurement of raw drugs:

The drugs mentioned in the formulation of *Nimbadi churna* were procured from the local vendor in Mangalore. The raw drugs were verified by the scholars of department of *dravyaguna* of Karnataka ayurveda medical college.

2. Properties of drugs in the formulation:

All the drugs mentioned in the formulation has *tikta*, *katu* and *Kashaya rasas*. Each drug has *jwarahara* property in them because of their *guna karma*. In total they possess anti-pyretic activity.

3. Preparation of *churṇa:*

The drugs mentioned in the formulation are checked for the authenticity and quality. The drugs are sorted, properly dried and made into powder form. Fibrous drugs are powdered separately. Drugs that contain *teekshna guna* are powdered taking special precautions.

4. Analytical study:

The analytical study carried out on the *churna* according to the standard protocols suggested the stability of the drug.

## CONCLUSION

1. The study can be concluded based on the critical analysis of the literary data, the analytical results and the experimental study on wistar albino rats.
2. To achieve the *jwarahara* property, the *guna karma* of the drugs in the *churna* is taken into consideration.
3. This Kalpana ensures easy method of preparation, storage and administration of the drugs.
4. The prepared *Nimbadi churna* was subjected to various analytical tests.

5. The sample was standardised as per standard testing protocol and the results of the standardisation parameters were mentioned.

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