



Research Article

PREPARATION AND STANDARDIZATION OF YOGARAJA CHURNAM

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ABSTRACT

Therapeutics in Ayurveda is really a treasure to be explored, understand and utilized to its maximum benefit. The preparations in Ayurveda are a reflection of its personalized medicine theory. Each formulation is designed and modified in such a way that it can suit to a person's condition in every aspect. *Ayah paatra pralepanam* is one of the unique therapeutic methods in this science. Most of the preparations in this method is ideal for curing the hepatic pathologies. In this paper an attempt is to done to explain the preparation of one among the valued herbo mineral preparation named *Yogaraja Choornam*. The preparation of the formulation involves the identification of genuine raw materials, powdering the herbal drugs to a fine size, for mineral drugs it involves its purification, incineration, finally proper mixing and the smearing of formulation in an iron vessel. Standardization of Ayurvedic formulation is an on-going process where one needs to be keen in identifying the new scientific methods to study the fine chemical procedures and the intermediate compounds formed, but at the same time be vigilant in sticking to the classical in parameters to be followed. For the mineral drugs the *Bhasmas* produced are subjected to classical evaluation like *Sookshmatvam* (fineness), *Rekhapurnada*, *Vaaritaratvam*, *Uthan/unamam*, *Niswadu* etc to confirm the Ayurvedic standards of *Bhasmas*. They are also subjected for XRD, XRF, SEM and AAS estimation for identifying the crystal structure, elemental analysis and fineness and composition. For the *Ayaah pralipta Yogaraja Choornam* the pH, ash values, particle size estimation, loss on drying, water extractives values and microbial load estimation are done. The values affix the standard for the formulation. Standardization of *Yogaraja choorna* is done which creates a background for the further studies to be carried out on the formulation.

INTRODUCTION

Yogaraja churnam is a herbomineral preparation mentioned in famous Ayurvedic textbook, *Bhaishajya Ratnavali*. It is an *Ayahpaatra pralipta* formulation. Ayurvedic therapeutics is unique in a way they approach towards each type of formulations. Here *Yogaraja churnam* is a fine powder like combination. But the final product should be given to the patient is the mode of use whoever concerned is in a very different way. The powder is subjected to get mixed with honey and applied on a pure iron vessel kept overnight and then used as per the dose mentioned.

The therapeutic efficiency is found to be very high in liver pathologies. So, this is an attempt to prepare and standardize the formulation.

The prime objective of a pharmaceutical study is to produce safe, effective and quality drugs. The pharmaceutical study in Ayurveda commences with the identification of genuine raw materials, selection of suitable processes which alters the characteristics features like low therapeutic doses, safety, longer shelf life.

MATERIALS AND METHOD

Ingredients of the Formulation

Yogaraja churnam is a Herbo mineral preparation. So it contains both herbals as well as minerals.

1. Herbal Ingredients

- **Triphala** - It is a herbal *Rasayana* formula consisting of equal parts of three myrobalans taken without seeds- *Amalaki* (*Emblca Officinalis*), *Bibheetaki* (*Terminalia bellirica*) and *Hareetaki*

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(Terminalia chebula)

- **Trikatu**- It means three peppers or three pungents. It is a combination of dried fruits of black pepper (Piper nigrum), long pepper (Piper longum) and dried rhizome of ginger (Zingiber officinale) in the ratio 1:1:1.
- **Chitraka**- Dried fruit of Plumbago zeylanica
- **Vidanga** - Purified and dried mature roots of Embelia ribes
- **Sugar**

- **Swarna makshika bhasma**- Incinerated Chalcopyrite
- **Rajatha makshika bhasma** - A variety of Makshika - chalcopyrite: copper pyrite incinerated
- **Shilajatu**- Purified black bitumen, a humic substance obtained from Himalaya, Vindhya mountains, mountains of Bhutan, Nepal and Punjab.
- **Loha bhasma**- Incinerated iron.

3. Honey

2. Mineral ingredients

Fig.1 Bibheetaki



Fig. 2. Hareetaki



Fig.3. Amalaki



Fig.4 Sundi



Fig. 5. Maricha



Fig. 6.Pippali



Fig.7. Chitraka



Fig. 8. Vidangam



Fig.9 Shilajathu



Fig.10. Swarnamakshika



Fig.11. Loha churna



Fig. 12. Rajathamakshika



Fig.13. Sugar



Fig. 14. Honey



Fig.15. Ayah paatra pralepanam



Preparation of Yogaraja churnam

The preparation of the entire yoga was completed through the following eight steps

1. Powdering of herbal ingredients

100g of each herbal ingredients except *Chitraka* are collected from a genuine source, identified by a botanist. The drugs are washed, cleaned, dried separately.

Then powdered and sieved through 120 mesh size sieves to obtain fine powder of drugs. These powders are stored in separate air tight containers.

2. **Chitraka Shodhana** is done as per the reference from Ayurvedic Pharmacopoeia of India Part 1 vol 1 appendix 1^[2]. *Chitraka* is purified by keeping it in *Churnodaka* (Calcium hydroxide solution) prepared as per Rasa Tarangini for 6 hours. The soaking is continued till it get a cleared *Churnodaka* solution and then dried in sunlight and powdered and kept in airtight container.

3. **Shilajatu purification** is done as per *Surya tapi* method from Rasa Tarangini. *Shilajatu* powdered and mixed with equal quantity of *Triphala kashayam* and double the quantity of boiled water and mixed well, strained to a wide opened vessel. It is kept in sunlight until a blackish scum is formed on the surface. The creamy layer is carefully removed and kept for drying. The process of scum removal is continued until its scum formation

stops. The dried scum is collected, powdered and kept aside.

4. **Swarna makshika and Rajatha makshika bhasma**

Both are obtained from a genuine source and subjected to AAS- Atomic Absorption Spectroscopy to ascertain its genuineness by the portion of copper content in it. The purification is done as per the reference from Ayurveda Prakasa^[3] and the *Marana* or incineration is done as per reference from *Rasaratna Samuchayam*^[4]. The *Putas* are subjected to done at a muffle furnace with temperature 600 degree, 8 *Putas* are done to get *Samyak maaritha bhasma*. The *Bhasma* obtained is subjected to all *Bhasma pariksha* in classical method to prove its quality and Scanning Electron Microscope and XRD study to ascertain its fineness, crystal structure and particle size.

5. **Loha Bhasma**

Loha is obtained in the form of fine powder from the market-iron powder electrolytic -100 mesh LR. The purification is done as per the *Nirvapa* method told in *Rasaratna Samuchchaya* and *Vishesa shodhana* is done as per Rasa Tarangini with *Triphala kashaya nirvapanam*. *Loha marana* or incineration is done using reference from *Rasa Tarangini* which comprises the *Bhanupaka*, *Sthali paka* and *Putas paka* with *Triphala* as the medium

selected. The *Putra* is done in muffle furnace at temperature set at 800 degrees. A total of 12 *Putas* are done to obtain *Bhasmas* of standard classical parameters. The *Bhasma* obtained is subjected to all *Bhasma pariksha* in classical method to prove its quality and Scanning Electron Microscope and XRD study to ascertain its fineness, crystal structure and particle size.

6. Mixing of Ingredients

The *Yogaraja churna* is prepared as per the standard mentioned in the *Churna prakaranam* of classics and standards of *Churna* set by Ayurveda Formulary of India. The finely powdered drugs are taken in the proportion as described in the formulation and thoroughly mixed in a mortar and pestle. The proportion of ingredients explained in the reference is

- * *Triphala* powder- 3 parts
- * *Trikatu* powder - 3 parts
- * *Vidanga* powder-1 part
- * *Chiraka* powder- 1 part
- * *Loha bhasma*- 5 parts
- * *Swarna makshika bhasma*- 5 parts

Organoleptic Evaluation of *Yogaraja churna*

Table 1: Organoleptic evaluation of *Yogaraja churnam*

S.no.	Characters	Evaluation result
1.	Colour Before <i>Ayah paatra pralepanam</i> After <i>Ayah paatra pralepanam</i>	Brick red in colour Jet black
2.	Taste	<i>Madhura-Tiktha</i> (sweet and bitter)
3.	Smell	Characteristic smell of ingredients
4.	Touch	Smooth and fine

Physical parameters of *Yogaraja Churman*

Table 2: Evaluation of Physical Parameters of Churnam

S.no.	Physical Parameters	Measured values
1.	pH	5.3
2.	Loss on drying	3%
3.	Ash values a) Total ash b) Acid insoluble ash	41.1% w/w 37%w/w
3.	Extractive values a) Water soluble extractive value b) Alcohol soluble extractive value	17.8%w/w 18%w/w
4.	Moisture value	11.2%w/w

Evaluation of particle size (Fineness)

Particle size estimation gives us the picture regarding fineness of the formulation, affirms the standard preparation protocols.

The particle size evaluation was done using Sieve method. 25gm of fine *Churna* was passed through sieves arranged in ascending order of sieve size and the quantity of *Churna* collected in each sieve was weighed to

- * *Rajatha makshika bhasma* - 5 parts
- * *Shilajatu* - 5 parts
- * Sugar- 8 parts

7. *Ayah Patra Pralepanam*

Yogaraja churna prepared is mixed with required quantity of distilled water to make a thick homogenous mass. Then it is smeared over a clean and dry iron vessel. The smearing should be thin and even. The vessel along with the smearing is left overnight and when the *Churna* is found dried up completely, it is scrapped off. The flakes are found to have a colour change from brownish red to jet black. These flakes are then finely powdered and honey is added only as an adjuvant given at the time of administration.

Standardization of *Yogaraja churnam* and its results

Analytical study is primarily concerned with fixation of standards, which help to ensure the quality of preparations.

The analytical profile of *Yogaraja churna* are done at Drug standardization and Drug Testing Lab at Govt. Ayurveda College, Thiruvananthapuram

estimate the percentage of particles passing through it. It was found that

- All the particles pass through sieve of mesh 10, 20, 40 and 60
- 93% passes through mesh no 80
- 90% through mesh no.100
- 88% through 120.

Thus, the *Churna* possesses particles in fine and ultra fine size.

Atomic Absorption analysis of *Yogaraja Churnam*

Atomic Absorption analysis is done at Drug Standardisation Unit, Govt. Ayurveda College, Thiruvananthapuram. The analysis done show that the heavy metals are present within the permissible mentioned in Ayurvedic Pharmacopoeia of India.

Table 3: Heavy Metal Estimation

S. no.	Heavy metal	Standard limit (ppm)	Observed limit (ppm)
1.	Arsenic	3	1.521
2	Lead	10	1.0922
3	Nickel	NA	0.9495
4	Copper	NA	1.67
5	Cadmium	0.3	0.0219

Microbial Analysis

Microbial load level analysis is done as per the procedure mentioned in Ayurvedic Pharmacopoeia of India. The analysis covers total bacterial count, total fungal count, presence of pathogen named *Escherichia coli*, *Salmonella ebony*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*.

The estimation found that the microbial load in *Yogaraja churna* is within the permissible limit

Table 4: Microbial Load of the *Churna*

S. no.	Microbial analysis	Permissible limit	Observed value
1.	Total bacterial count	NMT10 ⁵ CFU/ml	110CFU/ml
2.	Total fungal count	NMT10 ³ CFU/ml	51CFU/ml
3.	E. coli	Absent	Absent
4.	S.ebony	Absent	Absent
5.	S.aureus	Absent	Absent
6.	P.aeruginosa	Absent	Absent

DISCUSSION

Yogaraja churna is a yoga mentioned in the *Pandu roga chikitsa adhyayam* of *Bhaishajya Ratnavali*. The most important step in preparing a formulation is the identification and collection of genuine raw materials. For procuring a mineral drug, the physico chemical analysis should be done wisely. The current yoga contains three *Bhasmas*, so all the classical as well as modern *Bhasma* preparation and analytical standards are done. In the case of herbal drugs, the powdering should be as fine as to get mixed properly with *Bhasmas*. Proper blending of the ingredients is done with a mortar and pestle. In the narration of the formulation honey is said to be added in sufficient quantity that the *Churna* get soaked in it in an iron vessel. But practically it won't work properly, so *Ayapaatra pralepanam* is done with *Churnam* mixed with water and honey is set apart to give as an adjuvant. The colour, taste and texture of the formulation are a directive indication of its proper

mixing, and totality of ingredients.

The pH of the *Churna* is found to be 5.3, the acidic nature can be well balanced by the addition of honey. The total ash value indicates the total inorganic materials and the acid insoluble ash value indicate the total silica impurities present in the tested sample. Both the values are within the standard limit. Both the extractive values are also high in the sample, indicate that the raw materials used in the preparation are of up to the standards. The particle size estimation confirms the fineness of the formulation which adds on to the therapeutic activity. Heavy metal contamination is one of the burning issues for herbal medicines. The AAS estimation put the formulation studied under a safe range of heavy metal content. The formulation is then subjected to the microbial content profile, and estimation found that the *Churna* is complied with the WHO requirements.

CONCLUSION

While analysing the ingredients it is found that all the ingredients are having proven hepatoprotective, antioxidant and free radical scavenging activity. The unique combination of herbal, mineral drugs, sugar along with adjuvant honey and the *Ayah paatra pralepanam* renders high possibility for the formulation in hepato protective as well as curative aspect. The *Ayah patra lepanam* is one of the unique Ayurvedic therapeutics which should be subjected to further evaluation.

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