



STANDARDIZATION AND COMPARATIVE ANALYSIS OF DIFFERENT MARKETED FORMULATION OF AGNIMUKH CHURNA

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ABSTRACT:

The subject of herbal drug standardization is massively wide and deep, there is so much to know and so much seemingly contradictory theories on the subject of herbal medicine and its relationship with human physiology and mental function. India needs to explore the important formulations in the classical ayurvedic texts. This can be achieved only if the herbal products are evaluated and analysed using sophisticated modern techniques of standardization such as UV-Visible, TLC, HPLC, HPTLC, etc. The present paper reports on Standardization and Comparative Analysis of Different Marketed Formulation of Agnimukh Churna, a poly herbal ayurvedic medicine used in treatment of anorexia, indigestion, constipation, spleen disorders, non bleeding hemorrhoids' and abdominal pain.

Agnimukh Churna was prepared as per Ayurvedic text of Yogaratnakara, India. In-house preparation and two marketed have been standardized on the basis of organoleptic characters, physical characteristics, physico-chemical properties, TLC and HPLC for the estimation of marker compound Piperine. The set parameters were found to be sufficient to evaluate the Churna and can be used as reference standards for the quality control/quality assurance laboratory of a Pharmaceutical house.

Keywords: Agnimukh Churna; Physicochemical parameters; organoleptic characters; Polyherbal formulation; Standardization; Piperine;

INTRODUCTION

Large number of people are acknowledging and accepting use of herbal medicines in the contemporary West. Scientific community now realizes the potential of herbs as medicines. Many factors contribute to this situation. Side and adverse effects of modern medicines is well documented. Research in basic sciences has opened up unexplored facets of natural world leading to abandoning of old concepts and enthusiastically welcoming new concepts. In light of these developments, there is a renewed interest in the plant based medicine. India can emerge as the major country and play a lead role in production of standardized, therapeutically effective Ayurvedic formulation. India needs to accept the challenge present herbal formulations in a way accepted by scientific community. This can be achieved only if the herbal products are evaluated and analysed using sophisticated modern techniques of standardization.¹

Standardization is a system to ensure that every packet of medicine that is being sold has the correct substances

in correct amount and shall induce intended therapeutic effect. It is a requirement for ayurvedic formulation to undergo the quality tests in order to compete in international market so as to satisfy requirements of regulatory agencies of respective countries².

Therefore, an attempt has been made to standardize Agnimukh Churna; an ayurvedic formulation which is mentioned in classical ayurvedic text of Yogaratnakara, The ingredients of agnimukh Churna include Shwet Jirka (*Cuminum cyminum*), Shunti (*Zingibere officinale*), Kale namak (Black salt) Kali marich (*Piper nigrum*) Nimbusatva (Citric acid), Saindavalavana (Rock salt), Pudina Satva (menthol obtained from different species of *Mentha*), and is used in treatment of anorexia, indigestion, constipation, spleen disorders, non bleeding hemorrhoids and abdominal pain.³

In the present work, the Agnimukh Churna subjected to various pharmacognostical parameters. Three formulations, one in-house preparation and two samples from different manufacturers were procured and subjected to its organoleptic, physical, physico chemical analysis, TLC and chemical properties.

Methodology:

- Preparation of Agnimukh: Churna will be prepared as per the procedure given in Yogaratnakara Agirna Chikitsa.
- Powdered microscopy: It will be done for the examination of fibers, lignin, etc.
- Physico-chemical evaluation: The parameters such as extractive values, ash values and pH will be studied.
- Phytochemical investigations: To confirm the various secondary metabolites preliminary phytochemical investigation will be performed on the extracts obtained from Churna using different solvents.
- Subjecting extracts to phytochemical investigation using planar chromatographic technique.
- Compilation of data collected by in-house preparation and marketed products will be carried out.

RESULTS:**Table 1:** Loss on drying of Formulations of Agnimukh Churna;

| Sl.no | formulations | % loss of weight |
|-------|--------------|------------------|
| 1 | In- house | 12.1 |
| 2 | Baidyanath | 12.7 |
| 3 | Sanjevika | 9.8 |

Table 2: Ash values of ingredients used to prepare Agnimukh Churna:

| Sl. no. | Ingredients | Total ash % w/w | Acid insoluble ash % w/w | Water soluble ash % w/w |
|---------|----------------------|-----------------|--------------------------|-------------------------|
| 1 | Cuminum cyminum | 11.25 | 0.87 | 2.76 |
| 2 | Zingibere officinale | 4.36 | 0.9 | 2.9 |
| 3 | Piper nigrum | 5.92 | 0.5 | 5.8 |

Table 3: Ash values of in-house and marketed products of Agnimukh Churna;

| Sl no | Formulations | Total ash % w/w | Acid insoluble ash% w/w | Water soluble ash% w/w |
|-------|--------------|-----------------|-------------------------|------------------------|
| 1 | In-house | 23.9 | 1.55 | 22.85 |
| 2 | Baidyanath | 20.7 | 1.6 | 16.8 |
| 3 | Sanjevika | 23.2 | 1.55 | 15.4 |

Table 4: Extractive values of Churnas:

| Sl.no | Name of the product | Water soluble extractive value | Alcohol soluble extractive value |
|-------|---------------------|--------------------------------|----------------------------------|
| 1 | In-house | 15.130% | 10.012% |
| 2 | Baidyanath | 14.150% | 11.120% |
| 3 | Sanjevika | 13.310% | 11.234% |

Table 5: Preliminary phytochemical screening of alcoholic extracts of Churnas:

| Sl.no | Test | In-house | Baidyanath | Sanjevika |
|-----------|---|----------|------------|-----------|
| 01 | Alkaloids | | | |
| | Mayer's test | + | + | + |
| | Wagner's test | + | + | + |
| | Dragendroff's test | + | + | + |
| | Hager's test | + | + | + |
| 02 | Triterpenes | | | |
| | Salkowski's test | + | + | + |
| | Lieberman-storch | + | + | + |
| | Morawaski test | + | + | + |
| 03 | Steroids | | | |
| | Lieberman buchard test | + | + | + |
| | Sulfur test | + | + | + |
| | Salkowski's test | + | + | + |
| 04 | Carbohydrates | | | |
| | Molisch's test | + | + | + |
| | Fehling's test | + | + | + |
| | Starch test | + | + | + |
| 05 | Glycosides | | | |
| | 0.1gm powder+h ₂ so ₄ | + | + | + |
| | Anthraquinone | + | + | + |
| 06 | Flavonoids | | | |
| | Extracts+FeCl ₃ | + | + | + |
| | Shinoda test | + | + | + |

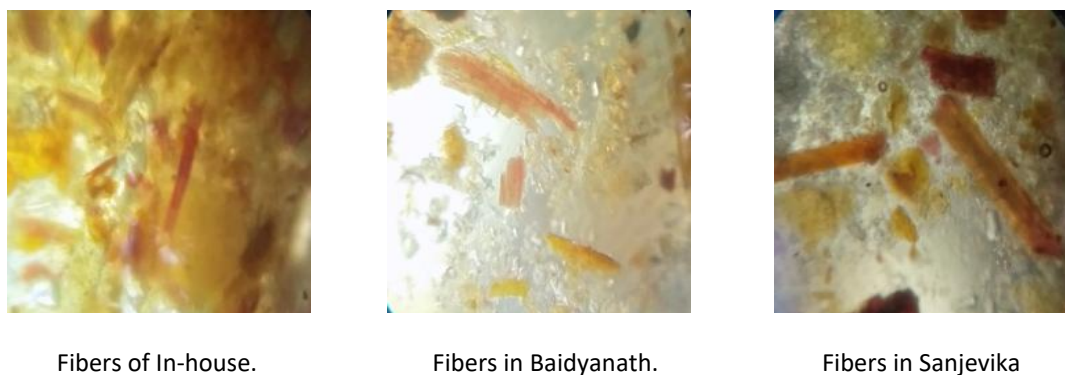


Figure 1: Powder Microscopy of Different Formulations of Agnimukh Churna:

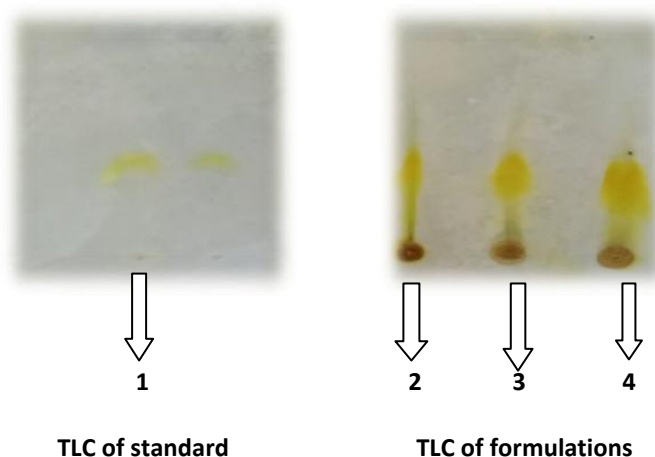


Figure 2: TLC of Methanolic extract of Agnimukh Churna for Piperine:

Table 5: Determination of R_f values of Piperine in Methanolic extract of Agnimukh Churna by TLC

| Sl no | Methanolic extract of | R_f values |
|-------|-----------------------|--------------|
| 01 | Standard | 0.2550 |
| 02 | In- house | 0.2625 |
| 03 | Baidyanath | 0.2625 |
| 04 | Sanjevika | 0.2687 |

DISCUSSION

Loss on drying of different formulations of Agnimukh Churna:

Agnimukh Churna of different brands and in-house were subjected to loss on drying and the results are given in the table no .4. Where % loss of in-house was 12.1%, Baidyanath was 12.7% and Sanjevika shows the 9.8%.

Ash values of ingredients used to prepare Agnimukh Churna:

All the ingredients of Agnimukh Churna were subjected for ash values and the results are given in the table no.5. Where total ash of *Cuminum Cyminum* was reported to be 11.25%, *Zingibere Officinale* showed 4.36% and *Piper Nigrum* showed 5.92% so *Cuminum cyminum* shows the

highest value of total ash. The acid insoluble ash of *Cuminum Cyminum* is 0.81% *Zingibere Officinale* showed 0.9% and *Piper Nigrum* shows the lowest of 0.5%. The water soluble ash values of *Cuminum cyminum* is 2.76%, *Zingibere Officinale* showed 2.9% and *Piper Nigrum* shows highest of 5.8%.

Ash values of in-house and marketed products of Agnimukh Churna:

Agnimukh Churna of different brands and in house was subjected for ash values and the results are given in the table no.6. Total ash, of in house is reported to be 23.9%, Sanjevika showed 23.2%, Baidyanath showed the lowest of 20.7%. The acid insoluble ash of in house and Sanjevika is reported to be 1.55% each and Baidyanath shows highest value of 1.6%, The water soluble ash of in

house is reported to be highest of 22.85%, Baidyanath showed 16.8% and Sanjevika shows lowest value of 15.4%.

Extractive values of Churnas:

Water extractive value and alcoholic extractive value of the formulations are reported in table no.7. Water extractive value of Sanjevika was found to be 13.310%, Baidyanath showed 14.150% and In-house formulation was found to be 15.130%. which means comparatively it contains more polar constituents, Alcohol extract of in house formulation was found to be 10.012%, Baidyanath has showed 11.120% ,Sanjevika showed highest of 11.234%.

Powder Microscopy of Different Formulations of Agnimukh Churna:

All the formulations of Agnimukh Churna contains lignified fibers which was shown in fig no.6

TLC of Methanolic Extract of Agnimukh Churna for Piperine

The Alcoholic extract of all the Churnas were subjected for TLC with the standard reference Piperine. The R_f values are given in the table no.18 and here the R_f values of in-house and Baidyanath were 0.2625 and the Sanjevika was 0.2687 and these values were matches with the standard Piperine R_f value that was 0.2550.

CONCLUSION:

The results of physical, physico chemical parameters like Loss on drying, ash value, extractive value, preliminary phytochemical screening, loss on drying, physical properties like bulk density, tap density, true density, Carr's index, Hausner's ration and analytical parameters like TLC of all the marketed formulations of Agnimukh Churna contains the intended ingredients with their standard values, there is significant difference in water soluble ash of in-house when compared to others. Rest of the values determined is having very insignificant difference.

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