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# PHARMACEUTICAL AND ANALYTICAL STUDY OF RASANJAN W.S.R AYURVED PRAKASH SAMHITA

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## ABSTRACT

In this study, *Daruharidra* (Berberis *Aristata*) and Goat milk is main ingredient, and both have been considered as a very significant herb in many eye and skin disease for external application. The bark is used as the main part of *Daruharidra* that is used in its crude form as powder or decoction. According to reference of *Ayurved Prakasha Samhita*, the Goat milk is used in preparation of *Rasanjan*. The present study is an attempt to prepare *Rasanjan* and evaluate the quality control parameters by doing analytical study.

**Keywords:** *Rasanjan, Rasakriya, Rasaut*, B. aristata, *Kwath, Ghana*.

## INTRODUCTION

The need of standardization of herbal drugs or formulation is important in the present era for quality control and safety evaluation. *Daruharidra* is one of the most important drugs in Ayurveda. Extract of *Daruharidra* is also known as *Rasanjan*, *Rasaut, Ghana* etc. Berberis species are major source of Berberine and other alkoids namely, Berbamine, Palmatine, isotetrandrine etc[1]. B. aristata is an erect shrub with 3-

6m height and sub-acute leaves [1]. *Daruharidra* and Goat milk both are used as a remedy for treating eye disorders, ear disorders, jaundice, diabetes, fever etc. *Rasanjan* (Berberis *Aristata*) or *Rasaut* is the crude concentrated extract prepared from roots and stem bark of *Daruharidra* (Berberis aristata)[2]. (Family: Berberidaceae). In *Rasanjan* preparation here Goat milk is used. Goat has tremendous result in eye disease. *Rasanjan* preparation is carried out in two steps [3]: *Kwath* preparation of *Daruharidra. Ghana* preparation. *Rasanjan* is mostly used as external application but it can also use as internally. After preparing appropriately by taking proper precautions, it should analyze for quality control. It shows stability of formulation physically and chemically. In this study, the pharmaceutical preparation and analysis of *Rasanjan* is done.

**Aim:** To study, the pharmaceutical preparation and analysis of *Rasanjan*.

**Objectives:**

**1. Primary-**

- To study, the Analytical study of *Rasanjan*.

**2. Secondary**

- Collection of Raw material.
- Authentication of Raw material.
- Preparation of *Daruharidra Kwath*.
- Preparation of *Rasanjan*.
- Analytical study of *Rasanjan*.

**Materials and Methods:**

1. Collection of *Daruharidra* from local market.
2. Collection of Goat milk from local market.
3. Authentication of Raw material was done from authenticated laboratory.
4. Preparation of *Rasanjan* according to reference of *Ayurved Prakasha*.
5. Quality control of *Rasanjan.*

**Procedure:**

Reference*: Ayurved Prakasha Samhita* 2/231

Preparation of *Rasanjan* was carried out in 2 steps-

Step I – Preparation of *Daruharidra Kwath* (Decoction).

Step II –Preparation of *Rasanjan*.

Step I - Preparation of *Daruharidra Kwath* [4]

**Table 1:** Ingredients for *Daruharidra Kwath*

| Sr. No | Ingredients | Quantity |
|---|---|---|
| 1. | *Daruharidra* | 250gms |
| 2. | Water | 4000ml |

1. *Daruharidra* stem bark free from insects was taken and washed properly for soil removal.
2. It was soaked in 16 parts of water i.e. 4000 ml for a period of 12 hours.
3. Soaked *Daruharidra* was kept on moderate flame for heating.
4. It was subjected to heating until the contents were reduced to 1⁄8$^{th}$ i.e. 500ml
5. Then it was filtered through cloth to get decoction of *Daruharidra.*

**Observation:**

• The colour of water changes to yellow after soaking.

• After *Kwath* preparation, its colour changes to dark brown.

**Step II- Preparation of *Rasanjan* [5]**

**Table 2:** Ingredients for *Rasanjan*

| Sr. No | Ingredients | Quantity |
|---|---|---|
| 1. | *Daruharidra Kwath* | 500 ml |
| 2. | Goat milk | 125 |

1. *Daruharidra Kwath* 500 ml was mixed with 1/4th quantity of Goat milk and subjected to heating on mild flame.
2. Continuous stirring of the contents was done to avoid sticking of content as the liquid turns into thick (syrupy) in consistency.
3. Further heating was carried out by water bath method to avoid charring.
4. After complete evaporation of liquid content, it was further dried in the Sun and preserved in air-tight containers.

**Observation:**

- The contents get thick and towards end turn semi-solid in consistency.
- Colour turns from dark brown to brownish black.

**Precautions:**

- *Kwath* preparation should be done on moderate flame.
- While *Kwath* preparation, do not cover the pan with lid. Pan should remain open from the top [6].
- During *Ghana* preparation heating should be done carefully and continuous stirring to avoid charring for which Water bath method is the best.

**Raw Material Analysis:**

**A. *Daruharidra*:** Collected from the market and subjected to authentication with classical reference to concerned department.

**Table 3:** Shows analytical result of *Daruharidra*

| Test | Specifications | Result |
|---|---|---|
| Appearance | Dried hard stem pieces | Dried hard stem pieces |
| Colour | Yellowish Brown | Light Yellowish Brown |
| Odour | Faint | Faint |
| Taste | Bitter | Bitter |
| Foreign Matter | NMT 2 % | Nil |
| Ash | NMT 14 % | 5.80% |
| Aia | NMT 5 % | 1.21 % |
| Ase | NMT 6 % | 6.52 % |
| Wse | NMT 8 % | 8.48 % |
| Moisture Content | NMT 5 % | 3.5 % |

**B**. Goat Milk

Collected from the local market and subjected to authentication with classical reference to concerned department.

**Table 4:** Shows analytical result of Goat Milk.

| | |
|---|---|
| Colour | White |
| Flavor & Odour | Satisfactory |
| Texture | Liquid |
| Taste | Normal |
| Consistency | Uniform |
| Acidity% | 0.13% |
| Fat% | 3.6% |
| Snf% | 9.0% |
| Lactose% | 5.24% |
| Protein% | 3.06% |

**Results:**

1. Organoleptic tests:

**Table 5:** Organoleptic tests

| Test | Result |
|---|---|
| Appearance | Semi-Solid |
| Colour | Yellowish Brown |
| Odour | Milky |
| Taste | Pungent, Bitter, Sweet. |

2. Physico- chemical tests[7] Following tests were carried out on prepared *Rasanjan* samples

A. Moisture value
B. Total ash value
C. Acid insoluble ash
D. Acid insoluble ash
E. Water soluble ash
F. Water soluble extractive value

G. Alcohol soluble extractive value.

**A. Moisture Value:** Procedure: 5 gm sample is weighed and kept in a porcelain crucible. Hot air oven thermostat is adjusted to 105°C and left for certain time to get stabilized at that temperature. Porcelain crucible with sample is kept on oven tray with equidistant from four walls of oven. Sample is dried for one hour. Porcelain crucible is taken out and kept in desiccator to prevent any moisture absorption. After self-cooling porcelain crucible with sample is weighed to calculate the loss of weight on drying. The percentage content of moisture value is calculated in percentage (%w/w).

Percentage Value of Moisture content = (Weight of sample obtained/Weight of sample taken) X 100

**B. Total Ash Value:**

**Procedure:** 5 gm Sample is weighed and kept in a silicon crucible. This crucible is kept on wire gauze and heated on a gas stove. It starts emitting fumes and heating is continued until fumes subside. Then this crucible is kept in muffle furnace equidistant from four walls and temperature is gradually raised up to 450°C for 6 hours. After complete incineration and after self-cooling, crucible is taken out and kept in a desiccator. The weight of ash with silica crucible is noted. Then the total ash is calculated in terms of percentage (%w/w).

Percentage value of total ash content =

(Weight of ash obtained/Weight of sample taken) X 100

**C. Acid insoluble Ash Value:**

Procedure: Above prepared ash is washed into a 100 ml beaker using 25 ml. of dilute hydrochloric acid. Beaker is boiled for 5 minutes. Contents are filtered through an ash less filter paper; residue is washed twice with hot water. Filter paper is placed in a silica crucible and incinerated by gradually increasing the heat in a muffle furnace at 450o C for some hours. After complete incineration and after self-cooling, crucible is taken out and kept in a desiccator. The weight of ash with silica crucible is noted. Then the acid insoluble ash is calculated in terms of percentage (%w/w).

Percentage value of acid insoluble ash =

(Weight of ash remained in Crucible/Weight of sample taken) X 100

**D. Water soluble Ash Value:**

**Procedure:** The method up to preparation of ash is same as above, instead of 25 ml HCl 25 ml of distilled water must be used. The weight of ash with silica crucible is noted. Then the loss of ash in water is calculated and water-soluble ash value is quantified in terms of percentage (% w/w). Percentage value of water-soluble ash = (Weight of ash dissolved in water/Weight of sample taken) X 100

**E. Alcohol Soluble Extractive Value:**

Procedure: Sample is weighed and transferred to a 100ml conical flask. 100 ml of the 90 % alcohol is added to it and closed with the cork. Kept aside for 24 hours with shaking frequently. Filtered, 25 ml of the filtrate is collected and transferred to a weighed, thin Porcelain dish. Evaporated to dryness on a water bath and dried completely in an oven at 100o C. Kept in a desiccator to cool, then percentage w/w of extractive with reference to air dried drug is calculated.

Percentage value of alcohol soluble Extractive value = (Weight of dry extract obtained/Weight of sample taken {air dried}) X 100.

**F. Water Soluble Extractive Value:**

**Procedure:** Sample is weighed and transferred to a 100ml conical flask. 100 ml of the 50 % chloroform water is added to it and closed with the cork. Flask is kept aside for 24 hours with frequent shaking. Filtered, 25 ml of the filtrate is collected and transferred to a weighed, thin Porcelain dish. Evaporated to dryness on a water bath and dried completely in an oven at 100o C. Kept in a desiccator to cool, then percentage w/w of extractive with reference to air dried drug is calculated.

Percentage value of alcohol soluble Extractive value = (Weight of dry extract obtained/Weight of sample taken {air dried}) X 100.

**Table 6:** Shows Physico-Chemical result.

| Test | Result |
|---|---|
| Loss On Drying | 6.0% |
| Ash | 7.2% |
| Aia | 55.1% |

| | |
|---|---|
| Alcohol Soluble Extractive Value | 15% |
| Water Soluble Extractive Value | 18.2% |
| Water Soluble Ash Value | 60.1% |
| Microbial & Fungal Contamination | Free from fungal and bacteria |

## DISCUSSION

*Rasanjan* is extract of *Daruharidra* it has very high efficacy. Preparation of *Rasanjan* is mentioned in two Ayurvedic texts. *Bhava Mishra* the author of *Bhava Prakasha* puts forward the use of cow's milk for preparation of *Rasanjan* whereas *Rasa Madhava* the author of *Ayurveda Prakash* has given use of goat's milk and procedure for both being the same. Properties of goat's milk according to *Ayurved Samhitas* i.e. *Sheet, Kashaya, Katu, Tikta*, *laghu, ghrahi and Tridoshara*. While preparing *Kwath*, extract of *Daruharidra* get settle down in *Kwath.* It appeared to be Dark yellow in colour, which may be due to presence of Berberine and tannins present in *Daruharidra*. Its odor is milky due to presence of goat milk. During the *Kwath* preparation boiling temperature was around 80-90$^{o}$C. After preparation of *Kwath*, goat milk was added and continues stirring were done to avoid charring. In *Ghana* preparation extract of herbs prepared by evaporation of moisture content of *Kwath*. *Rasanjan* is *Ghana* of *Daruharidra* and can be easily used. Analytical testing was done it observed that Moisture value is 6%, Total ash is 7.2%, AIA is 55.1%, Water soluble ash value is 60.1%, Alcohol soluble extractive value is 15% and there's no bacterial or fungal growth seen.

## CONCLUSION

The present study shows that *Rasanjan* was prepared as per *Ayurved Prakasha Samhita's* reference with due precautions. The sample was analyzed for its physico-chemical component study at an authorized lab. No bacterial or fungal growth seen in sample. It found to be good quality of *Rasanjan* which can be used as externally as well as internally for various disorders.

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