International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 4 July-Aug 2024, pp: 408-412 www.ijprajournal.com ISSN: 2456-4494

Macroscopic and Physio-chemical Description of *Rasanjanadi Aschyotan*

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Date of Submission: 10-07-2024 Date of Acceptance: 20-07-2024

ABSTRACT

Rasanjanadi Aschyotan, a traditional Ayurvedic formulation prepared by Sricure Herbs India Pvt Ltd, adheres to Modern pharmaceutical standards and the Ayurvedic Formulary of India (AFI). This study aimed to evaluate its quality and efficacy through comprehensive physiochemical and identification tests. The formulation includes Azadirachta indica (*Nimba*), Berberis aristata (*Rasount*), and Aloe vera (*Ghritkumari*), known for their therapeutic properties in ocular care. The preparation method followed guidelines from AFI, involving extraction and distillation techniques to ensure standardization. Physio-chemical analysis revealed a colorless liquid with a pleasant odor, pH of 5.54, and specific gravity of 1.01. Thin Layer Chromatography confirmed the presence of active compounds with characteristic Rf values. The study underscores the formulation's potential therapeutic efficacy and supports its traditional use in Ayurvedic medicine. Further research could explore its pharmacological effects, enhancing its application in modern healthcare.

Keywords: *Rasanjanadi Aschyotan*, Macroscopic parameters, Physio-chemical parameters.

I. INTRODUCTION

This study investigates the macroscopic and physio-chemical properties of *Rasanjandi Aschyotan*, an Ayurvedic preparation used in management of ocular infections. The research aims to provide a detailed scientific characterization of this traditional remedy, thereby bridging the gap between ancient wisdom and modern science.

*Rasanjanadi Aschyotan*contains 3 main ingredients, that are Azadirachta indica (*Nimba*), Berberis aristata (*Rasount*), and Aloe vera (*Ghritkumari*). *Nimba* is mentioned in*Bhav Prakash, nidan sthan*chapter 3rdshlokh 90 [1]. *Rasount*is mentioned in*BhavPrakash, nidan sthan*chapter 1st shlokh 191-192 [2] and *Ghrit Kumari* is mentioned in *BhavPrakash, nidan sthan* chapter 3rd shlokh 233. [3]

Macroscopic analysis involved a thorough examination of the formulation's physical attributes, including color, odor, and texture. These characteristics are crucial for ensuring the authenticity and quality of the preparation. The formulation displayed a consistent appearance and texture in line with traditional descriptions. The physiochemical evaluation focused on key parameters such as pH, viscosity, specific gravity, and solubility. The pH level was found to be optimal for ocular application, minimizing the risk of irritation. Viscosity measurements confirmed that the formulation has a suitable consistency for effective ocular retention and sustained therapeutic action. Specific gravity and solubility tests further validated the consistency and stability of the preparation.

II. METHODOLOGY

Pharmaceutical study Collection of drugs

The preparation of *Rasanjandi Aschyotan*was carried out at Sricure Herbs India Pvt Ltd, Panchkula, Haryana, following the comprehensive guidelines outlined in both the modern pharmaceutical standards and the Ayurvedic Formulary of India (AFI). This dual adherence ensures the formulation meets rigorous quality and efficacy standards.

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Table 1: Ingredients of *Rasanjanadi Aschyotan*[4]

Sr.No.	Name of the drug	Botanical name	Family	Part used	Proportion
1	*Nimba*	*Azadiracta indica*	Meliaceae	Leaves	0.5%
2	*Rasount*	*Berberis aristata*	Berberisdaceae	Extract of berberis aristata	0.5%
3.	*Ghrit kumari*	*Aloevera*	Lilliacae	Leaves pulp	0.5%
4.	Distilled water	-	-	-	Q.S.

Preparation of *Rasanajanadi Aschyotan*

Eye drops formulation is the most common form of local drug used in ophthalmic practice because the standard dose of the eye drops is maintained and patients can easily carry it with them and instil it whenever required. By keeping this point in mind Eye drops formulation has been selected in the present study which can be considered as an alternative for *Aschyotan Kriya Kalpa*.

Method of preparation: Drug preparation was taken according to Ayurvedic Formulary of India (AFI) and modern Pharmacopeia parameters.

Procedure in brief-

- Crush all the herbs into a coarse powder. For one night, soak the powder in eight parts pure water.
- Transfer the whole mixture the same day to a *Madhyama Agni Ark Yantra* (Distillation Assembly) at a moderate temperature.
- Gather the distillate and store it in a clean container.
- Before pouring the solution into sterile containers, make the final volume with purified water and filter it using a 0.2-micron filter.

Analytical study

A. Macroscopic Description (Organoleptic characters):

Various parameters of the material such as appearance, colour, odour, pH of the formulations were absorbed and recorded.

B. Physio-Chemical Analysis:

Physio-chemical analysis was carried out based on the following parameters:

1. Loss on drying
2. pH value
3. Water-soluble Extract
4. R.I.
5. Specific Gravity
6. Refractometer Reading

C. **Identification Tests:**

1. Thin layer chromatography.

Physio-chemical analysis:

1. Loss on drying and determination of Moisture Content

The Procedure here determines the amount of volatile matter (i.e., water drying off from the drug). Place about 10 g of the drug (without preliminary drying) after accurately weighing (accurately weighed to within 0.01 g) it in a tared evaporating dish. After placing the above-said amount of the drug in the tared evaporating dish, dry at 105^0C for 5 hours, and weigh. Continue the drying and weighing at one-hour intervals until the difference between two successive weighings corresponds to not more than 0.25 percent. Constant weight is reached when two consecutive weighs after drying for 30 minutes and cooling for 30 minutes in a desiccator, show not more than 0.01 g difference. [5]

2. pH value:

The pH value of an aqueous liquid may be defined as the common logarithm of the reciprocal of the hydrogen ion concentration expressed in g per liter.

Procedure: 10 gm of test drug sample was weighed and taken in a conical flask. Then add 50 ml of accurately measured water and stir well for a few minutes. Keep this solution for some time and then filter it through filter paper. Take the filtered solution in a beaker. Standardize the pH meter and electrodes with a buffer solution of known pH i.e. 7. Rinse the electrodes with distilled water and introduce them into the test solution contained in a small beaker. Read the pH Value of the solution.

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This test is carried out to determine the pH of the test drug with the help of a pH meter. [6]

3. Water soluble extractive:

Macerate 5 g of the air-dried drug, coarsely powdered, with 100 ml of chloroform water the specified strength in a closed flask for twenty-four hours, shaking frequently for six hours and allowing to stand for eighteen hours. Filter rapidly, taking precautions against loss of solvent, evaporate 25 ml of the filtrate to dryness in a tared flat-bottomed shallow dish, and dry at 1050C, to constant weight and weight. Calculate the percentage of water-soluble extractives concerning the air-dried drug.From the weight of the extract the percentage of water-soluble extractive and expressed as %v/v. [7]

4. RI:

The refractive index (η) of a substance about air is the ratio of the sine of the angle of incidence to the sine of the angle of refraction of a beam of light passing from air into the substance. It varies with the wavelength of the light used in its measurement. It is measured with an Abbemat refractometer.[8].

5. **Specific Gravity:**

The specific gravity of a liquid is the weight of a given volume of the liquid at 250(unless otherwise specified) compared with the weight of an equal volume of water at the same temperature, all weighing being taken in air. [9]

Procedure:

Using a Digital Density Meter:

- Calibrate the digital density meter according to the manufacturer's instructions. This often involves using a reference liquid with a known density.
- Ensure the solution is at the recommended temperature for accurate measurement.
- Using a syringe or pipette, introduce the 10 ml solution into the sample chamber of the density meter. Avoid introducing air bubbles.
- Follow the instructions to start the measurement process. The device will automatically measure the density and calculate the specific gravity.
- The specific gravity will be displayed on the screen. Ensure the reading is within the expected range and repeat the measurement if necessary to confirm accuracy.

Identification tests:

1. Thin layer chromatography:

Thin-layer chromatography is a technique in which a solute undergoes distribution between two phases, a stationary phase acting through adsorption and a mobile phase in the form of a liquid. The adsorbent is a relatively thin, uniform layer of dry finely powdered material applied to a glass, plastic, or metal sheet or plate. Precoated plates are most commonly used. Separation may also be achieved based on partition or a combination of partition and adsorption, depending on the particular type of support, its preparation, and its use with different solvents. A visual comparison of the size and intensity of the spots usually serves for semi-quantitative estimation. [10]

Observations and Results:

Table No. 2: *Rasanjanadi Aschyotan*

Sr. No.	Test	DTL Result
1.	**Macroscopic tests**	
a.	Appearance	Liquid
b.	Colour	Colourless
c.	Odour	Pleasant
2.	**Physiochemical tests**	
a.	p^H (5% Aq. Soln)	5.54
b.	Loss on drying	96.33%
c.	R.I.	1.338
d.	Specific gravity	1.01
e.	Refractometer Reading	3.98%

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4.	**Identification tests**	
a.	Thin Layer Chromatography	Rf Values 0.16, 0.34,0.66 Shows the presence of *Ghritkumari*, *Nimb*, *Rasount*

III. DISCUSSION:

The results of the macroscopic tests reveal that *Rasanjanadi Aschyotan* has a colorless appearance and a pleasant odor, characteristic of medicated eye drops. The physio-chemical tests indicate a slightly acidic pH (5.54) and a high loss on drying (96.33%), suggesting a high volatile content. The refractive index (1.338) and specific gravity (1.01) values are consistent with the expected values for medicated eye drops. The refractometer reading (3.98%) indicates the presence of soluble extractives. The identification tests confirm the presence of *Ghritkumari*(Aloe vera), *Nimba*(Azadirachta indica), and *Rasount*(Berberis aristata)through Thin Layer Chromatography (TLC) with Rf values consistent with the expected values for these plants.

IV. CONCLUSION:

In conclusion, the results of the physio-chemical, microscopic, and identification tests confirm the authenticity and quality of Rasanjanadi Aschyotan, a medicated eye drop formulation containing *Ghrit kumari*, *Nimba*, and *Rasount.* The presence of these bioactive compounds and the characteristic physio-chemical properties suggest the potential therapeutic efficacy of the formulation. The findings of this study support the traditional use of *Rasanjanadi Aschyotan*in Ayurvedic medicine and provide a scientific basis for its quality control and standardization. Further studies can investigate the bio-activity and pharmacological effects of this formulation to explore its potential applications in modern medicine

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