Analytical and quality control method of Ayurveda medicinal plants: A case study of Rasnasaptaka Kashaya

Rasnasaptaka Kashaya is an Ayurveda medicine which is a combination of eight medicinal plants. The method of analysis is the combination of classical and modern instrumental methods. The selected sample drugs met the required standards in most of the criteria of assessment. The outcome of the work suggests periodic assessment of raw drugs for quality control of Ayurveda Formulations.

Keywords: Rasnasaptaka Kashaya, quality control, Ayurveda, pharmaceutical study, Rasnasaptaka Kashaya

INTRODUCTION

The quality of Ayurveda medicines has to be maintained from raw material to packaging. The present study was carried out using reliable, specific and sensitive quality control methods of analysis for standardization of raw drugs. Methods: Seven sample drugs were collected from Sri Dharmastala Manjunatheshwara Ayurveda Pharmacy, Udupi which included Rasna (Alpinia galanga), Guduchi (Tinospora cordifolia), Aragwadha (Cassia fistula), Devedaru (Cedrus deodara), Gokshura (Tribulus terrestris), Erandamoola (Ricinus communis) and Punarnava (Boerhavia diffusa). The samples were subjected to detailed physico chemical study. Results and Discussion: The parameters under consideration included Loss on drying, Total Ash, Acid Insoluble ash, Alcohol soluble and water-soluble extractive values. The result of the present study reveals that the selected sample drugs met the pharmacopeia standards in most of the criteria of assessment. The outcome of the work suggests periodic assessment of raw drugs for quality control of Ayurveda Formulations.

Keywords: Standardization, physico chemical study, rasna saptaka kashaya

METHODS AND METHODS

Sample Collection

The samples were collected for the study from Sri Dharmastala Manjunatheshwara Ayurveda Pharmacy, Udupi, Karnataka and Authentication of the Drugs was done by the Department of Dravya Guna of Sri Dharmastala Manjunatheshwara College of Ayurveda, Hassan, Karnataka.

Methodology

Loss on drying at 105°C

Test sample was taken in the amount of 10 grams and set in tarred vanishing dish. It was dried at 105°C for 5 hours in hot air oven and gauged. The drying was proceeded until contrast between two...
progressive loads was not more than 0.01 subsequent to cooling in desiccator. Percentage of moisture was calculated with reference to the weight of the sample.

**Total Ash:**

2 g of test sample was burned in a tarred platinum crucible at temperature not surpassing 450˚C until carbon free cinder is obtained. Level of ash was determined with reference to weight of the example.

**Acid Insoluble Ash:**

To the crucible containing total ash, add 25ml of dilute HCl (Hydrochloric Acid) and boil. Gather the insoluble matter on ash less filter paper (Whatman 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. Enable the residue to cool in suitable desiccator for 30 minutes and weigh immediately. Figure the content of acid insoluble ash with reference to the air-dried drug.

**Alcohol soluble extractive:**

Weigh precisely 4 g of the sample in a glass stoppered flask. Add 100 ml of distilled Alcohol (around 95%). Shake once in a while for 6 hours. Permit to represent 18 hours. Filter rapidly taking care not to lose any solvent. Pipette out 25ml of the filtrate in a pre-gauged 100 ml receptacle. 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 gauge. Compute the level of Alcohol extractable matter of the sample. Repeat the investigation twice and take the average value.

**Water soluble extractive:**

Weigh precisely 4 g of the example in a glass stoppered flask. Add 100 ml of distilled water, shake occasionally for 6 hours. Permit to represent 18 hours. Filter quickly taking consideration not to lose any solvent. Pipette out 25ml of the filtrate in a pre-gauged 100 ml container. Evaporate to dryness on a water bath. Keep it in an air oven at 105˚C for 6 hours. Cool in a desiccator and gauge. Repeat the investigation twice. Take the average value.

### RESULTS

**Table I: Physico chemical Parameters assessed in the Ingredients of Rasna Saptaka Kashaya**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Test Done</th>
<th>Obtained Value</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Rasna</td>
</tr>
<tr>
<td>01</td>
<td>Foreign Matter</td>
<td>0.57%</td>
</tr>
<tr>
<td>02</td>
<td>Loss on Drying</td>
<td>9.3%</td>
</tr>
<tr>
<td>03</td>
<td>Total Ash</td>
<td>13%</td>
</tr>
<tr>
<td>04</td>
<td>Acid Insoluble Ash</td>
<td>6%</td>
</tr>
<tr>
<td>05</td>
<td>Alcohol Soluble</td>
<td>6.4%</td>
</tr>
<tr>
<td>06</td>
<td>Water Soluble</td>
<td>33.6%</td>
</tr>
</tbody>
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### DISCUSSION

The Physico-chemical evaluation of the drug is an important parameter in detecting adulteration or improper handling of drugs. The extractive values are used to evaluate the chemical constituents present in the crude drug and also help in estimation of specific constituents soluble in a particular solvent.

Loss on drying is a widely used test method to determine the amount of volatile matter of any kind (including water) that can be driven off under the condition specified. It compares the weight of a product before and after it is dried. This difference in weight is taken as the percentage of moisture in the product. The present study reveals that among the samples collected maximum moisture content was present in Aragwadha fruit (13.96%) and Erandamoolu (12.2%).

The ash content of a crude drug is generally taken to be the residue remaining after incineration. It usually represents the inorganic salts naturally occurring in the drug and adhering to it, but it may also include inorganic matter added for the purpose of adulteration. Ash determination furnishes a basis for judging the identity and cleanliness of a drug. Among the sample drugs subjected to Ash Value, except Devadaru samples all the other sample values were within the Standard Limits.

Acid Insoluble Ash value is used to determine the earthy matter present in the roots, rhizomes and even leaves. The crude drugs may contain calcium oxalate crystals, the amount of which varies depending on the environmental conditions. Acid Insoluble Ash value of Punarnava and Devadaru was above the standard values which denote the presence of earthy matter above the required limits in these samples.

The extractive values are useful for the assessment particularly when the constituents of the drugs can't be promptly evaluated by any other methods. It additionally demonstrates the nature of chemical constituents present in the drug as well as in the identification of adulterants. Water soluble and Alcohol soluble extractive values are its sub types.

Water soluble extractive value is applied for the drugs which contain water soluble constituents such as tannins, sugars, plant acids and mucilage. Water Soluble Extractive value of Erandamoolu was below the Standard values.

Alcohol soluble extractive value is useful in the identification of alcohol soluble constituents of the drug such as tannins, resins and alkaloids. Alcohol Soluble Extractive value of Rasna and Erandamoolu was less than the Standard limits which may be due to the environmental conditions during the time of growth and collection.

### CONCLUSION

The result of the study suggests that the physico chemical analysis of the drugs is very essential for the authentication of the drug and quality control of raw drugs. The estimation of these parameters is highly essential for raw drugs or plant part used for the preparation of compound formulations. The periodic assessment is essential for quality assurance and safer use of herbal drugs. The result of the present study reveals that the selected sample drugs met the pharmacopeia standards in most of the criteria’s of

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assessment and therefore it can be safely and efficaciously used in the preparation of Rasna Saptaka Kashaya.

REFERENCES

7. Indian Pharmacopeia Commission. Ministry of health and family welfare, Indian Pharmacopoeia., Volume 3, Govt. of India, New Delhi, 1996, 47-49.

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