PHARMACOGNOSTICAL AND PHYSICO-CHEMICAL EVALUATION OF KHARJURA PAKA: AN AYURVEDIC HERBAL FORMULATION

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KEYWORDS:
Kharjura Paka, Kharjura, Physico-chemical, Pharmacognosy.

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ABSTRACT

Ayurveda, the science of life, deals with the drugs of animal, herbal and mineral origin. Drugs of plant origin occupy more than 90% of the constituents of the Ayurvedic formulation used during treatment. In folklore practice Kharjura Paka is an Ayurvedic herbal formulation indicated in the management of Malnourished. Traditional use of Kharjura Paka was seen for Brimhana Karma (improving the nutritional level of body). Till date there is no standard references regarding Kharjura Paka. Pharmacognostical study of raw drug exposed the quality of Nourishments. Organoleptic features of drugs were within the standard range. The Pharmacognosical study reveals the presentation of Stone cells and Saccharine with tannin content/stained with FeCl\(_3\). The pH value of Kharjura Paka was 5, Water soluble extract was 83.5\%w/w, Alcohol soluble extract was 85 \%w/w, Ash value was 1.82\%w/w, Loss on drying was 3.43 \%w/w.
INTRODUCTION:
The vital responsibility played by herbal medicine in serving the therapeutic requirement of major fraction of human populace worldwide is identified since ancient times. But the quality control and standardization of facets of these herbal drugs stay as a herculean task even in the 21st century. Accurate identification and guarantee of purity are measured through Pharmacognosy and Pharmaceutical chemistry which is inescapable ladder needed for the quality assurance and standardization of any of the herbal medicine. The global acceptance of Ayurvedic system of medicine is hiking day to day. So it becomes the obligation of every individual of this fraternity to ensure the standard of purity, safety and efficacy of the drugs and formulations used in this system of medicine.

Protein energy malnutrition is measured in terms of Underweight (low weight for age), Stunting (low height for age) and Wasting (low weight for height). The prevalence of stunting among under five is 48%, wasting is 19.8% and with an underweight prevalence of 42.5%, which is highest in the world. The traditional system of medicine can offer much in this regard, if thousands of explored combinations are brought in time limit. Kharjura is one among them with Bhrimhana Karma property which is used traditionally. In this study kharjura paka was made to make it palatable. Ingredients for Kharjura Paka are Kharjura (phoenix dactylifera Linn.) and cow ghee. Till now no Pharmacognostical and Phyto-chemical study for evaluation of this compound is been conducted. Hence, with this aim Pharmacognosy and Phyto-chemical evaluation of KharjuraPaka was performed. Till date no reference regarding Kharjura Paka was found. In the present study, for the first time Pharmacognostical and Phytochemical analysis of Kharjura paka for setting a preliminary profile for further references was performed.

MATERIAL AND METHOD
Collection: Drug was purchased from market of Jamnagar, Gujrat, India. Identification was done in the Pharmacognosy department, IPGT & RA, Jamnagar. Drug was prepared as per the traditional method of making Kharjura Paka. (Anubhuta Yoga) Later on organoleptic and microscopy test were carried out in finished product. Physico-chemical analysis of the product was carried out in Pharmaceutical chemistry department of IPGT & RA, GAU, Jamnagar.

Preparation of Kharjura paka: One part of pieces of Kharjura (Phoeix dactylifera Linn.) and one-fourth part of heated cow ghee was mixed and allow to heat at mild temperature. It was steered until fibril consistency. And 20 gram of each Paka was made.
Morphological study:
Purchased Sample was observed carefully for its identical morphological characters. Morphological characters like colour, shape, size were noted down.

Pharmacognostical evaluation:
*Kharjura* and *Kharjura paka* were taken for detailed microscopic study. Transverse section of the *Kharjura* and *Kharjura paka* were taken. Then they were dissolved in distilled water and filtered through filter paper and the filtrate were dried and placed on slide. Firstly it was observed after dissolving in plain water and then stained with Phlroglusinole and Conc. HCl for lignified materials and FeCl₃ for tannin content. The micro-photographs were taken by using corlzeiss Trinocular Microscope attached with camera.

Physico-chemical study:
Standardization of herbal drug is the need of the day, because in the time of commercialization the incidence of adulteration has increased. It is very much essential to fix some parameter for standardization of drugs, so that the genuineness of the drug is established and adulteration can be checked. Physico-chemical study like Loss on drying, ash value, water soluble extractive value, alcohol soluble extractive value and pH of both the samples was carried out as per the standard protocols.

Result and Discussion:
Pharmacognosy study helps in authentification of the commonly used drugs. In this study organoleptic characters of the *Kharjura* and *Kharjura paka* like colour, taste, odour and touch were recorded and results were depicted in the Table. Analytical characters of *Kharjura* under the microscope are Epicarp with cuticle, Mesocarp, Saccharine with tannin content, 2-3 layers of Stone cells, Mesocarp with vascular bundle, Saccharine with tannin content/stained with FeCl₃, Epicarp, Lignified parenchymal cell in Mesocarp were mentioned in Plate no 1.(A to D) and diagnostic characters of *Kharjura Paka* under the microscope are Saccharine contents, Mesocarp cells, Oil globules, fibers, Parenchyma cells, Epicarp cells with stone cells, Saccharine content after treating with FeCl₃, Lignified cells along with mesocarp cells were mentioned in Plate no 2.(A to I).

*Kharjura paka* was made out of the ingredients in specific proportion and it was subjected to physico-chemical parameters. Evaluation of physico-chemical parameters and qualitative
analysis helps to identify the presence of specific ingredients in a formulation and also to evaluate the purity by comparing with the standard ones.viii pH is the measure of acidity or basicity of a solution. In the present sample pH was detected by using pH indicator paper and it was 5 showing the mild acidic nature of the solution. Loss on drying method is applied to determine the amount of water for crystallization, or volatile matter in the sample. Loss on drying of test drug is 3.43 %w/w. Total ashes are designed to mature the total amount of material remaining after ignition. Ash value of *Kharjura Paka* is1.83 %w/v. Water soluble extract & Methanol soluble extract is 83.5 %w/w and 85 %w/w respectively. 3.43 %w/w loss on drying found in present study.

**Conclusion:**
Pharmacognostical findings confirm the ingredients present in the *Kharjura paka* and raw drugs cross verified with API. This shows purity of the product & quality. In phyto-chemical analysis water soluble & alcohol soluble extract, pH, Ash value, loss on drying estimation was assessed. Though the groundwork requisites for the standardization of *Kharjura Paka* are covered in the current study, additional cavernous analysis and investigations are required for the identification of all the active chemical constituents of the test drug to substantiate the clinical efficacy. The results of this study may be used as the reference standard in further research undertakings of its kind.
Plate 1: Microscopic characters of *Kharjura* (A to F):

A. Epicarp with cuticle, mesocarp
B. Saccharine with tannin content
C. 2-3 layer of stone cells
D. Mesocarp with vascular bundles
E. Saccharine with tannin content with fecl3
F. Epicarp Lignified parenchyma cell in mesocarp
Plate 2: Microscopic characters of *Kharjura Paka* (A to I):

- A. Saccharine contents
- B. Mesocarp cells
- C. Oil globules
- D. Fibers
- E. Stone cells of epicarp
- F. Parenchyma cells
- G. Epicarp cells with stone cells
- H. Saccharine content after treating with fec~13~
- I. Lignified cells along with mesocarp cells
Table no 1. Organoleptic Characters of *Kharjura* and *kharjurapaka*.

<table>
<thead>
<tr>
<th>Organoleptic Characters</th>
<th><em>Kharjura</em></th>
<th><em>Kharjura Paka</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Taste</td>
<td>Madhura (Sweet)</td>
<td>Madhura (Sweet)</td>
</tr>
<tr>
<td>Colour</td>
<td>Dark Brownish</td>
<td>dark blackish/brownish</td>
</tr>
<tr>
<td>Odour</td>
<td>Sweetish</td>
<td>Sweetish with ghee smell</td>
</tr>
<tr>
<td>Touch</td>
<td>Smooth</td>
<td>Smooth and oily</td>
</tr>
</tbody>
</table>

Table no 2. Physico-chemical analysis of *Kharjura* and *kharjura paka*.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Test</th>
<th><em>Kharjura</em> (As per API)</th>
<th><em>Kharjura Paka</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Loss on Drying (% w/w)</td>
<td>-</td>
<td>3.43 %w/w</td>
</tr>
<tr>
<td>2</td>
<td>Ash Value (% w/w)</td>
<td>Not more than 3%</td>
<td>1.82 %w/v</td>
</tr>
<tr>
<td>3</td>
<td>Water Soluble Extract (% w/w)</td>
<td>Not less than 65</td>
<td>83.5 %w/w</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Methanol Soluble Extract (% w/w)</td>
<td>Not less than 20</td>
<td>85 %w/w</td>
</tr>
<tr>
<td>5</td>
<td>pH</td>
<td>-</td>
<td>5 (by PH indicator paper)</td>
</tr>
</tbody>
</table>
REFERENCES:


vi. Anonymous, 1996.The Ayurvedic Pharmacopoeia of India New Delhi: Govt. of India Publication; p. 233-235.)
