PHARMACOGNOSTICAL STUDY OF PAUSHTIKA BISCUITS – A NUTRITIVE FORMULATION IN THE MANAGEMENT OF UNDERNUTRITION IN PEDIATRIC AGE GROUP

Gehija Jaidev*, Prof. Patel KS, Dr. Kori VK, Singh Azad and Dr. Harisha C. R.

IPGT & RA, Gujarat Ayurved University, Jamnagar, India.

*Corresponding Author: Dr. Gehija Jaidev
IPGT & RA, Gujarat Ayurved University, Jamnagar, India.

ABSTRACT
India is home to 40 percent of the world’s children and 35 percent of the developing world’s low-birth-weight infants live in India; every year 2.5 million children die in India, accounting to one in five deaths in the world. More than half of these deaths could be prevented if children were well nourished. India’s progress in reducing child undernutrition has been slow. The prevalence of child undernutrition in India deviates further from the expected level at the country’s per capita income than in any other developing country. Children in weaning period and those who have not fed properly with an appropriate food are more prone to undernutrition. So for the treatment of undernutrition, an Ayurvedic formulation of Paushtika Biscuit was selected, it is a food of choice in weaning period. The standardization was carried out to the finished product Paushtika Biscuit to confirm its identity, quality, and purity. The pharmacognostic work reveals that presence of pitted vessels of Guduchi, starch grains of Shunti, a mesocarp cell of Kharjur, an Epidermal cell of wheat, Fibres of Atibala, Dark yellow sugar contains Kharjur etc. was observed microscopically. Organoleptic features of coarse powder made out of the crude drugs were within the standard range as mentioned in the classic.

KEYWORDS: Undernutrition, Paushtika Biscuit, formulation.

INTRODUCTION
Biscuit is a term used for a diverse variety of baked, commonly flour-based food products, which is typically hard, flat and unleavened. Palatable, easy to carry and don’t require further preparation before consumption. Considered as staple snacks. Biscuits can be savoury or sweet, but most are small at around 5 cm (2.0 in) in diameter. Cookies are softer and thicker. Cracker - biscuits of a low sugar and fat content, frequently bland or savory. Biscuit is a low moisture bakery product (below 4%). Biscuit dough is made from soft wheat flour with a high amount of sugar (25–35%) and shortening (20-60%).
Khajara consists of ripe and mature fruit with seed removed, of Phoenix dactylifera Linn. (Fam. Araceae), a tall palm tree up to 36 m high, cultivated or occasionally self-sown in arid parts of the country Synonyms is Sanskrit Aharjara, Kharjara Fruit a berry, oval to oblong, compressed, of varying shapes; 2 to 3 cm long, smooth or slightly wrinkled, reddish-brown to yellowish-brown; pulp fleshy, sticky, soft, viscus; odour, not distinct; taste, sweet. Amlaki fruits of Emblica officinalis Gaertn. Syn. Phyllanthus emblica Linn. (Fam. Euphorbiaceae); mostly collected in winter season after ripening and in Kashmir in summer, a small or medium-sized tree, found both in a natural state in mixed deciduous forests of the country ascending to 1300 m on hills; cultivated in gardens, home yards or grown as a roadside tree. The drug consists of curled pieces of the pericarp of dried fruit occurring either as a separated single segment; 1-2 cm long or united as 3 or 4 segments; bulk color grey to black, pieces. Yasti consists of dried, unpeeled, stolon and root of Glycyrrhiza glabra Linn, (Fam. Leguminosae), a tall perennial herb, up to 2 m high found cultivated in Europe. Persia, Afghanistan and too little extent in some parts of India. Stolon consists of whitish yellow brown or dark brown outer layer, externally longitudinally wrinkled, with occasional small buds and encircling scale leaves, smoothed transversely, cut surface shows a cambium ring about one-third of radius from outer surface and a small central pith, root similar without a pith, fracture, coarsely fibrous in bark and splintered in wood, odour, faint and characteristic, taste, sweetish. Aitbala roots are used as the nutritional value. Abutilon indicum (Linn.) is the Latin name of this plant and it is belonging to Sweet (Fam. Malvacae) family. It is a hairy herb with 1.0-1.5 m high, annual or perennial with golden yellow flowers, flowering are mostly throughout the year and found abundantly throughout the hotter parts of India, as a common weed on roadsides and other waste places in plains and hills. Taproots are fairly long with lateral branches, 1.5-2 cm in diameter, light brown, outer surface smooth with dot-
like lenticels, bark thin. They can be easily peeled off, odor, feeble, taste, astringent and bitter.\textsuperscript{[7-9]} Guduchi is a long-lasting creeper over the trees like mango, neem etc. The stem is covered by Transparent layer and can be peeled off. It has much potential down. Leaves-Heart shaped, individualized, pointed at the tip and slimy. Flower-small yellow flowers appearing in clusters. Fruits-bean shaped, appearing red on ripening and flourish in cold and moderate. Sunti consists of dried rhizome of Zingiber officinale Roxb. (Fam. Zingiberaceae), widely cultivated in India, rhizomes dug in January-February, buds, and roots removed, soaked overnight in water, decorticated, and sometimes treated with lime and dried. Rhizome, laterally compressed bearing short, flattish, ovate, oblique, branches on upper side each having at its apex a depressed scar, pieces about 5-15 cm long, 1.5-6.5 cm wide (usually 3-4 cm) and 1-1.5 cm thick, externally buff coloured showing longitudinal striations and occasional loose fibres, fracture short, smooth, transverse surface exhibiting narrow cortex (about one-third of radius), a well-marked endodermis and a wide stele showing numerous scattered fibro-vascular bundles and yellow secreting cells, odour agreeable and aromatic, taste, agreeable and pungent. Mandakaparni consists of the dried whole plant of Centella asiatica (Linn.) Urban. Syn. Hydrocotyle Asiatica Linn. (Fam. Apiaceae), a prostrate, faintly aromatic, stoloniferous perennial herb, commonly found as a weed in crop fields and other waste places throughout India up to an altitude of 600 m. Small creeping herb with slender stem, rooting at nodes giving rise to thin, brownish-grey, roots of about 2.5 to 6.0 cm in length; leaves 1 to 3 from each node, orbicular-reniform, crenate, base cordate, petioles channelled with adnate stipules; flowers fascicled umbels each carrying 3 or 4 flowers, short-stalked; fruits cremocarp, ovoid, with laterally compressed seeds. Pisti are prepared by triturating the drug with the specified liquids and exposing to sun or moonlight.\textsuperscript{[10,11]} These are termed as Anaginitapta Bhasma (bhasma prepared without the medium of fire). Parval Pisti is good formulation highly used in various alignments. Method of Marana of the powder of Sodhi Maranara is ground in Triphala Kvatha and chakras are prepared. These chakras, when dried, are kept in sarva Sampata and subjected to Gaja Puta. This process is repeated 30 times. The colour of bhasma will be red Mundra Bhasama Acceptable variety is taken from Rasataragni, Tamga 20 126.\textsuperscript{[12]}

**MATERIALS AND METHODS**

**Drug Material**

Raw drug materials were collected from the pharmacy store of Gujarat Ayurved University. The ingredients and the part used are given in the table.

### Ingredients of Paushthika Biscuit

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name</th>
<th>Latin Name</th>
<th>Part to be used</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Godhum</td>
<td>Triticum turgidum varmirabile</td>
<td>Seed</td>
<td>50%</td>
</tr>
<tr>
<td>2</td>
<td>Makhana</td>
<td>Euryale feroxalbis</td>
<td>Fruit</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>Amalaki</td>
<td>Emblica officinalis Gaertn</td>
<td>Dried Fruit</td>
<td>1 Part</td>
</tr>
<tr>
<td>4</td>
<td>Madhuyashti</td>
<td>Glycyrrhiza glabra Linn.</td>
<td>Root</td>
<td>1 Part</td>
</tr>
<tr>
<td>5</td>
<td>Mandukaparni</td>
<td>Centella asiatica Linn.</td>
<td>Whole plant</td>
<td>1 Part</td>
</tr>
<tr>
<td>6</td>
<td>Guduchi</td>
<td>Tinospora cordifolia Willd.</td>
<td>Stem</td>
<td>1 Part</td>
</tr>
<tr>
<td>7</td>
<td>Atibala</td>
<td>Abutilon indicum Linn.</td>
<td>Root &amp; seeds</td>
<td>1 Part</td>
</tr>
<tr>
<td>8</td>
<td>Dry Kharjurooa</td>
<td>Phoenix dactylifera Linn.</td>
<td>Dried Fruit</td>
<td>1/3&lt;sup&gt;rd&lt;/sup&gt; of Total</td>
</tr>
<tr>
<td>9</td>
<td>Shunthi</td>
<td>Zingiber officinale Roxb</td>
<td>Rhizome</td>
<td>1/10&lt;sup&gt;th&lt;/sup&gt; Part</td>
</tr>
<tr>
<td>10</td>
<td>Pravala Bhasma</td>
<td>-</td>
<td>-</td>
<td>1/10&lt;sup&gt;th&lt;/sup&gt; Part</td>
</tr>
<tr>
<td>11</td>
<td>Mandura Bhasma</td>
<td>-</td>
<td>-</td>
<td>1/10&lt;sup&gt;th&lt;/sup&gt; Part</td>
</tr>
<tr>
<td>12</td>
<td>Sharkara</td>
<td>Q.S</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Method of Preparation of the Paushthika Biscuit

Godhum Churna, Amalaki, Makhana, Madhuyashti, Guduchi, Atibala, Dry Kharjura Pravala Mandura, and sugar were taken in given proportion. All these contents were mixed with powdered Sharkara. Ghee was added to this mixture and homogeneous mixture of these entire was made in the machine. This mixture was spread on the clean surface and equal size biscuit was made of this mixture. Then these biscuits were arranged in a tray in single layer. Then these trays were kept in a furnace for 20 min at a temperature of 150°C. After confirming that proper baking is done biscuit trays was taken out. Efforts were taken to make every biscuit of approximately 10 grams.

### RESULTS AND DISCUSSION

**PAUSHTHIKA BISCUIT**

**Morphology/ Appearance**

1. Shape- Rectangular

**Organoceptive characters**

1. Color- Brown light
2. Odor- fragment
3. Taste- light Sweet
4. Touch- thick solid

**Microscopic characters**

1. Aleurone grain of Kharjura
2. The brown content of Kharjura
3. Crystal fiber of Yashtimadhu
4. The epidermal cell of Mandukparni
5. Group of simple fibers of Mandukparni
6. Lemma of Godhuma
7. Rhomboidal crystal of Yashtimadhu
8. Sclerid of Amalaki
9. Oil Globule along with Simple starch Grain
10. Iodine stained Starch Grain
11. Simple starch Grain of Godhum
12. Simple starch Grain of Guduchi with Hilum
13. Simple starch Grain of Makhana
14. Simple starch Grain of Sunthi with Hilum
15. Starch Grain with Hilum
16. Prismatic crystals of Atibala
17. The epidermal cell of Godhum
18. Fibers of Atibala.

Main constituents saw in a microscopic study of Paushtika Biscuit

Fig No.1 Aleurone grain of Kharjura
Fig No.2 The brown content of Kharjura
Fig No.3 Crystal fiber of Yashtimadhu
Fig No.4 The epidermal cell of Mandukparni
Fig No.5 Group of the Simple fiber of Mandukparni
Fig No.6 Lemma of Godhuma
Fig No.7 Rhomboidal crystal of Yashtimadhu
Fig No.8 Sclerid of Amalaki
Fig No.9 Oil Globule along with Simple starch grain
Fig No.10 Iodine stained starch Grain
Fig No.11 Simple starch Grain of Godhum
Fig No.12 Simple starch Grain of Guduchi with Hilum
DISCUSSIONS AND CONCLUSION

*Paushtika* Biscuits is an ultimate formulation which is highly nutritious biscuits because it contains ayurvedic traditional plants. These plants are highly used for fulfilling for various disease alignment. This concept is highly recommended for those children who are suffering from malnutrition. It will also recover faster in malnutritional and it is easy to take and also used in Diets.

ACKNOWLEDGMENT

The authors are very thankful to Dr.C R RUDRAPA, Head of the department, Department of Pharmacognosy laboratory, IPGT&RA Jamnagar, Gujarat, India for providing the Research facilities.

REFERENCES

7. Liu TS.List of Economic Plants of Taiwan. Taipei Taiwan, 1952; 163.