EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 5
Issue: 6
612-615
Year: 2018

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

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Article Received on 04/04/2018 **Article Revised on 25/04/2018** **Article Accepted on 15/05/2018**

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 savory 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- 55%) and shortening (20-60%).[1] Kharjara 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, Kharjrara 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, viscous; 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.[4-6] Stolon consists of yellowish 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 splintery in wood, odour, faint and characteristic, taste, sweetish. Atibala roots are used as the nutritional value. Abutilon indicum (Linn.) is the Latin name of this plant and it is belonging to Sweet (Fam. Malvaceae) 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.[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. Sunthi 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.[10-11] These are termed as Anagnitapta 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 sarava Samputa 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 Rasatarangni, Tarnga 20 126.[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 *Paushtika* Biscuit

S.No.	Name	Latin Name	Part to be used	Proportion
1	*Godhum*	*Tritucumturgidum varmirabile*	Seed	50%
2	*Makhana*	*Euryale ferox*salisb	Fruit	10%
3	*Amalaki*	*Emblica officinalis* Gaertn	Dried Fruit	1 Part
4	*Madhuyashti*	*Glycyrrhiza glabra* Linn	Root	1 Part
5	*Mandukaparni*	*Centella asiatica* Linn.	Whole plant	1 Part
6	*Guduchi*	*Tinospora cordifoila*Willd.	Stem	1 Part
7	*Atibala*	*Abutilon indicum*Linn.	Root & seeds	1 Part
8	Dry *Kharjoora*	*Phoenix dactylifera* Linn	Dried Fruit	1/3rd of Total
9	*Shunthi*	*Zingiber officinale* Roxb	Rhizome	1/10th Part
10	*Pravala Bhasma*	-	-	1/10th Part
11	*Mandura Bhasma*	-	-	1/10th Part
12	*Sharkara*			Q.S

Method of Preparation of the *Paushtika* 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 150^0C. 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

PAUSHTIKA BISCUIT

Morphology/ Appearance

1. Shape- Rectangular

Organoleptic 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*

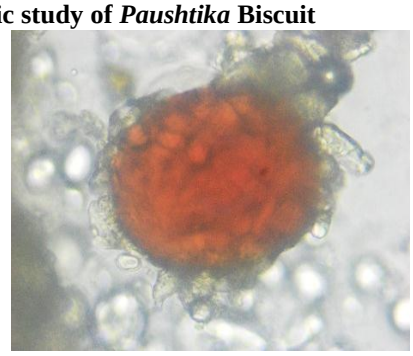

Fig No.2 The brown content of *Kharjura*

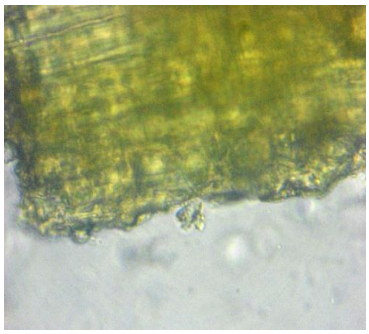

Fig No.3 Crystal fiber of *Yashtimadhu*

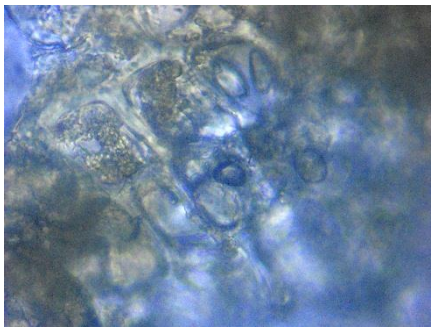

Fig No.4 The epidermal cell of *Mandukparni*



Fig No.5 Group of the Simple fiber of *Mandukparni*

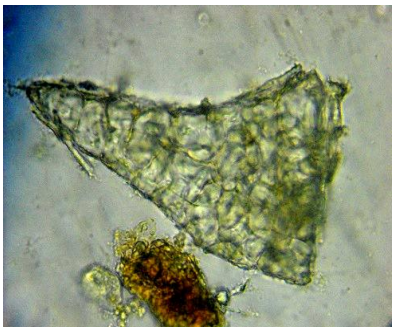

Fig No.6 Lemma of *Godhuma*



Fig No.7 Rhomboidal crystal of *Yashtimadhu*

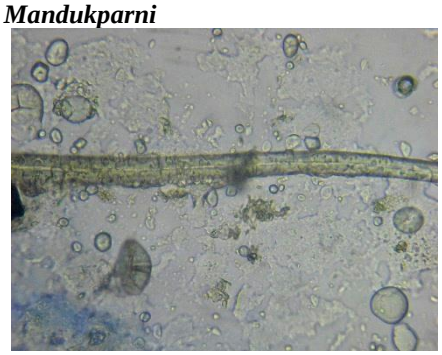

Fig No.8 Sclerid of *Amalki*

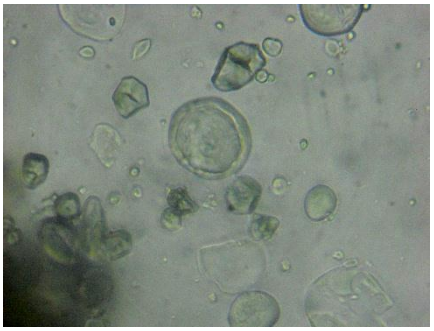

Fig No.9 Oil Globule along with Simple starch grain

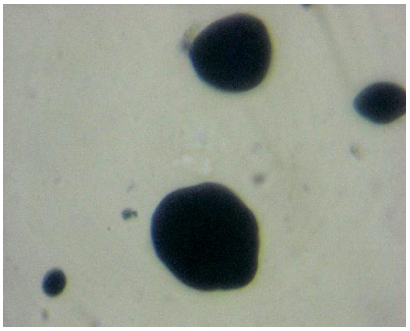

Fig No.10 Iodine stained starch Grain

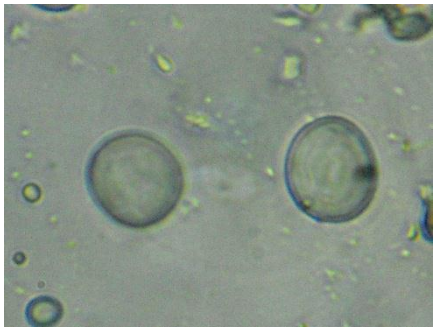

Fig No.11 Simple starch Grain of *Godhum*



Fig No.12 Simple starch Grain of *Guduchi* with Hilum

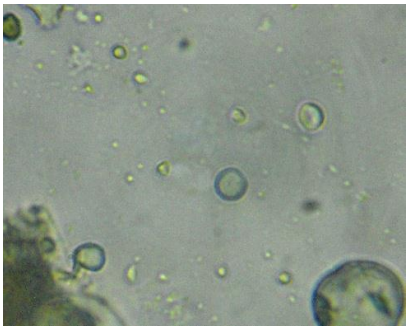

Fig No.13 Simple Starch Grain of *Makhan*

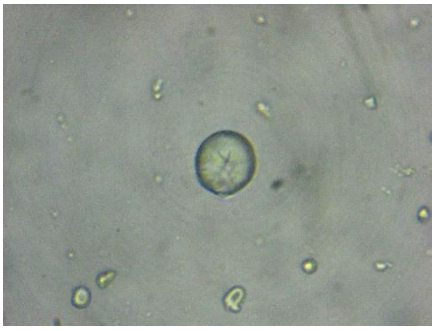

Fig No.14 Simple starch grain of *Sunthi* with hilum



Fig No.15 Starch Grain with hilum

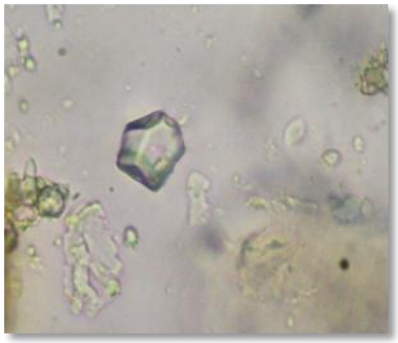

Fig No.16 Prismatic crystals of *Atibala*

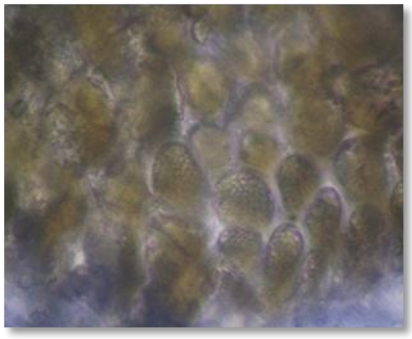

Fig No.17 The epidermal cell of *Godhum*

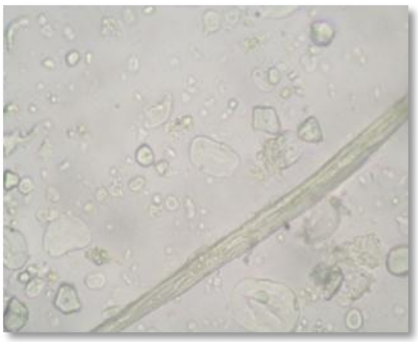

Fig No.18 Fibers of *Aibala*

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.

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