ISSN 2456-3110
Vol 2 · Issue 1
Jan-Feb 2017

Journal of Ayurveda and Integrated Medical Sciences

www.jaims.in

JAIMS

Charaka Publications

Indexed

ISSN: 2456-3110 ORIGINAL ARTICLE Jan-Feb 2017

Standard manufacturing process of *Lekhana Putapaka*

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ABSTRACT

Putapaka is one of the best local and effective applications for the treatment of eye disorders. *Putapaka* when used properly then it will treat burning sensation, inflammation, pain, feeling of friction, discharges, itching sensation, stickiness, muddy secretions and congestion of blood vessels. In classics there are three types of *Putapaka* are described *Snehana Putapaka*, *Lekhana Putapaka* and *Ropana Putapaka*. *Lekhana Putapaka* is prepared mainly with the help of *Lekhana Dravyas*. It is used for scrapping of the *Doshas*. *Lekhana Putapaka* is composed of the liver and flesh of wild animals with the drugs of *Lekhana* group and *Lauha Bhasma*, *Tamra Bhasma*, *Shankha Bhasma*, *Saindhava*, *Samudrafena*, *Kasisa*, *Srotanjana* and *Dadhi Mastu*. In this study, the ingredients for *Lekhana Putapaka* has been taken as per the reference of *Sushruta Samhita* but prepared by some modification (in pressure cooker). The yield of three batches of *Putapaka* was 85ml, 90ml and 100 ml respectively. The physico-chemical parameters like pH, specific gravity and solid content and phytochemical parameters like glycocides, saponin, tannin, steroids, amino acids, proteins etc has been carried out.

Key words: *Putapaka, Lekhana Putapaka,* Standard manufacturing process.

INTRODUCTION

In the study of *Sushruta Samhita, Uttara Tantra* reveals that there is one group of eye diseases, which are responsible for visual impairment; where as mineral drugs are described in the texts of *Rasashastra*. *Kriyakalpa*. These are specially modified procedure to suit the anatomical and physiological peculiarities of the eye.[1] The term '*Kriyakalpa*' comprises a number of local measures, claimed to be the most efficacious in the management of all the eye diseases. "*Kriyakalpa*" has a very superior position as it is tissue targeted, fast acting, simple but innovative method of drug administration to various parts of eyes including the posterior segment, the optic centre, visual pathway also. The different *Kriyakalpas* are mentioned in our classics are, *Seka*, *Aschyotana*, *Tarpana*, *Putapaka*, *Anjana*, *Pindi* and *Bidalaka*.[2]

Safety and efficacy of a drug mainly depends on the method of preparation. To assess the quality of a finished product, there should be some basic standards as well as method of preparation. There are several parameters for making a standard of manufacturing process like, raw material, in process analysis, final product analysis. Many formulations are very well described in classics but there is much confusion with respect to standards to be followed while preparing a formulations as well as basic parameters to assess the quality of the finished product.

By keeping this in mind the present study has been carried out to standardize the manufacturing process of *Lekhana Putapaka*. *Putapaka* is one of the formulations which are used as *Kriyakalpa*. *Putapaka* is a particular method of preparing drugs, in which the

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Submission Date : 10/01/2017 Accepted Date: 04/02/2017

Access this article online

Quick Response Code

Website: www.jaims.in

DOI: 10.21760/jaims.v2i1.7494

ISSN: 2456-3110 ORIGINAL ARTICLE Jan-Feb 2017

various ingredients are wrapped up in leaves and being covered with clay, heated in the fire, and *Swarasa* was extracted. The drug used in *Putapaka* is in aqueous solution form and has higher active component concentration. It helps for rapid cure of disease.[3] Three different types of *Putapaka* are mentioned in our classics i.e. *Snehana Putapaka*, *Lekhana Putapaka* and *Ropana Putapaka*.[4] Here in this present study the attempt has been made to standardize the manufacturing process of *Lekhana Putapaka* with some changes in manufacturing process (pressure cooker method).

Materials and Methods

All the ingredients of *Lekhana Putapaka* were taken as per classical reference[5] but prepared with the help of pressure cooker method. Raw materials were procured from Sunder Ayurveda Pharmacy, J. S. Ayurved College, Nadiad. The quantity of all the ingredients of three batches is shown in the given table 1. Before preparation of *Lekhana Putapaka* all raw drugs were powdered individually in *Khalva Yantra*. Then all material mixed together in mentioned proportion. After that the material was grinded in mixer grinder with minced flesh and *Dadhi Mastu* (watery portion of Yoghurt). That paste was cooked in the pressure cooker for 20 minutes with the temperature of about 350^{0}C - 450^{0}C and allowed it to cool down. Then properly cooked material was filtered through cotton cloth and filtrate was measured.

Observations and Results

Total three batches were prepared of *Lekhana Putapaka*. The instruments used in manufacturing process were pressure cooker, mixer grinder, gas stove and cotton cloth to filter the juice. For each batch the time for grinding was about 5 minutes and the heating duration was 20 minutes. The temperature was also measured during cooking with the help of pyrometer that was about 350^{0}C - 450^{0}C. After trituration strong smell of *Trikatu* was felt. After cooking the characteristic smell of ingredients was mild.

The organoleptic parameters like colour, odour and taste; physico-chemical parameters like total solid content, pH, specific gravity and relative viscosity and phytochemical parameters like glycocides, saponin, tannin, steroids, amino acids, proteins etc. are shown in table 2, table 3 and table 4 consecutively.

Table 1: Showing the ingredients of the *Lekhana Putapaka*[6]

No.	Drug	Latin name	Batch 1	Batch 2	Batch 3
1	*Sunthi*	*Zingiber officinale*	5 gm	5 gm	5 gm
2	*Maricha*	*Piper nigrum*	5 gm	5 gm	5 gm
3	*Pippali*	*Piper longum*	5 gm	5 gm	5 gm
4	*Lauha Bhasma*	Finished product	5 gm	5 gm	5 gm
5	*Tamra Bhasma*	Finished product	5 gm	5 gm	5 gm
6	*Shankha Bhasma*	Finished product	5 gm	5 gm	5 gm
7	*Shuddha Pravala Churna*	Finished product	5 gm	5 gm	5 gm
8	*Saindhava*	Rock salt	5 gm	5 gm	5 gm
9	*Samudrafena*	Cattle fish bone	5 gm	5 gm	5 gm
10	*Shuddha Kasisa*	Ferrous Sulphate	5 gm	5 gm	5 gm
11	*Srotanjana*	Antimony sulphide	5 gm	5 gm	5 gm
12	*Dadhi Mastu*	Watery part of yoghurt	200 ml	200ml	200ml
13	*Mamsa*	Meat	100gm	100gm	100gm
Yield			**85 ml**	**90 ml**	**100 ml**

Table 2: Showing the organoleptic parameters of *Lekhana Putapaka*

No.	Parameters	Batch 1	Batch 2	Batch 3
1	Colour	Light brown	Light brown	Light brown

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2	Odour	Pleasant	Pleasant	Pleasant
3	Taste	*Lavana, Katu*	*Lavana, Katu*	*Lavana, Katu*

Table 3: Showing the Physico-chemical parameters of *Lekhana Putapaka*

No.	Parameters	Batch 1	Batch 2	Batch 3
1	Total solid content[7]	14.16%	13.17%	11.45%
2	pH (10% aqueous solution)[8]	4.91	4.88	5.53
3	Specific gravity[9]	1.030	1.036	1.027
4	Relative viscosity[10]	-	-	1.081

Table 4 : Showing phytochemical screening of *Lekhana Putapaka*[11]

No.	Parameters	Batch 1	Batch 2	Batch 3
1	Glycoside	+	+	+
2	Amino acid	+	+	+
3	Protein	+	+	+
4	Carbohydrate	+	+	+
5	Flavanoid	-	-	-
6	Tannin	-	-	-
7	Steroid	+	+	+
8	Saponin	+	+	+
9	Alkaloid	+	+	+

Discussion

In present study, all the ingredients of *Lekhana Putapaka* were taken as per classical reference but prepared with the help of pressure cooker method not by classical *Putapaka* method. In classical method all mentioned ingredients are mixed together and triturated with watery part of yoghurt and meat. Then the bolus is formed, bolus is wrapped into *Gambhari Patra* and covered with clay. After drying the bolus, it is heated till red hot stage. After self cooling, *Swarasa* is extracted with the help of cotton cloth.

Before doing the modification of *Lekhana Putapaka* classical method, we prepared three batches by different methods such as classical method in that bolus was heated on gas stove by taking whole and crushed meat and in another method bolus was heated in Electric muffle furnace (EMF) but the yield from these batches were very less i.e. 20ml (*Swarasa* extracted with using crushed meat on gas stove), 40 ml (*Swarasa* extracted with using whole meat) and 50ml (*Swarasa* extracted with the help of EMF) respectively. In EMF method, the same quantity of materials that of classical method were taken and that bolus was kept in EMF with the temperature of 250^0 C. Those same materials were also taken and cooked in the pressure cooker for 20 minutes with the temperature of 350^0C - 450^0C and *Swarasa* was extracted and got 100ml of *Swarasa* through this method, which was maximum than previous method.

The average pH of the formulation is 5.10 % which shows the extracted juice is acidic in nature. The total solid content found in average is 12.92 % which shows the presence of metal and mineral ingredients in the extracted *Swarasa*. As we have used meat for *Lekhana Putapaka* the viscosity is found in the sample.In phytochemicals parameters like protein, carbohydrate, steroid, saponin, alkaloid, and glycosides are present and tannin and flavanoids are absent in all the samples.

Conclusion

The modified method (pressure cooker) of *Lekhana Putapaka* has been found practically more useful than classical procedure in accordance to procedure and yield. Extracted juice of both methods is a herbo-mineral formulation, acidic in nature and blending of protein, carbohydrate, steroid, saponin, alkaloid and glycosides.

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How to cite this article: Rejoice N. Macwan, Vaishnav PU, Singh LB, Umrethiya BL, Kalasariya BD. Standard manufacturing process of Lekhana Putapaka. J Ayurveda Integr Med Sci 2017;1:98-101. http://dx.doi.org/10.21760/jaims.v2i1.7494

Source of Support: Nil, **Conflict of Interest:** None declared.

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