

Extraction of *Tuvaraka Beeja Taila*

Research article

Ravindra Angadi^{1*}, Shridhara Bairy²

1. Associate Professor, 2. Professor & Head,
SDM College of Ayurveda, Kuthpady, Udupi-574118

Abstract

Tuvaraka (Hydnocarpus pentandra (Buch.-Ham.)) is one among the most trusted drugs from the treasure of Ayurveda. The oil extracted from the seeds of '*pakwa tuvaraka phala*', commonly known as 'chaulmoogra oil' is mentioned as a potential healer for all types of *kushtha roga* - a group of skin diseases. *Tuvaraka (Hydnocarpus pentandra (Buch.-Ham.))* widely grows in the Western Ghats. It is an evergreen deciduous tree, growing up to 15 meters or more in height. The method of oil extraction from dry seeds of *Tuvaraka* has well documented 'classical' references. Since '*Tuvaraka taila*' is a potent healer of '*kushtha roga*' (skin diseases) (*Su. Ci. 13 / 19 - 34*) and very less used in the therapeutic world of *Ayurveda* because of its '*teekshna guna*' (strong inherent properties), the proper extraction of this oil from the seeds of '*tuvaraka*' is essential to promote its therapeutic use. In this article, the extraction of '*Tuvaraka beeja taila*' (*Su. Ci. 13 / 19 - 34*) is elaborately documented and discussed.

Key words: *Tuvaraka: Hydnocarpus pentandra (Buch.-Ham.), Tuvaraka beeja:* Seeds of *Hydnocarpus pentandra (Buch.-Ham.), Tuvaraka taila:* Caulmoogra oil

Introduction:

Tuvaraka (Hydnocarpus pentandra (Buch.-Ham.)) is one among the most trusted drugs from the treasure of Ayurveda. The oil extracted from the seeds of '*pakwa tuvaraka phala*' (ripe fruits of *Hydnocarpus pentandra (Buch.-Ham.)*), commonly known as 'caulmoogra oil' is mentioned as a potential healer for all types of *kushtha roga* - a group of skin diseases.

Tuvaraka (Hydnocarpus pentandra (Buch.-Ham.)) is an evergreen deciduous tree, widely grown in the Western Ghats up to 15 meters or more in height.

Its well grown fruits will be globose, mammilate and tomentose with 5 to 10 cm in diameter. The seeds will be 15 to 20 in a fruit with striate, sub ovoid and obtusely angular measuring 2 to 2.5 cm long.

The ripe fruits collection is usually done by the end of summer season i.e. before the rainy season begins. The March and April months are the ideal time for collection of ripe fruits.

Once when the fruits are collected the seeds inside are separated carefully, spread in clean wider stainless steel trays and dried under hot sun.

This dry seeds are now subjected for extraction of oil. For this we find well documented 'classical' methods of oil extraction.

Since '*Tuvaraka taila*' is a potent healer of '*kushtha roga*' (skin diseases) (*Su. Ci. 13 / 19 - 34*) and very less used in the therapeutic world of *Ayurveda* because of its '*teekshna guna*' (strong inherent

*Corresponding Author:

Ravindra Angadi

Associate Professor,

SDM College of Ayurveda,

Kuthpady, Udupi-574118

E-mail: drraviangadi@gmail.com

Ph.No: +91-9448211058

properties), the proper extraction of this oil from the seeds of 'tugaraka' is essential to promote its greater therapeutic use.

In this article, the extraction of 'Tugaraka beeja taila' (*Su. Ci. 13 / 19 - 34*) is elaborately documented and discussed.

Materials and methods:

Aim of the study:

To extract the oil from the seeds of *Tugaraka (Hydnocarpus pentandra (Buch.-Ham.))* as per classical reference (*Su. Ci. 13 / 19 - 34*).

Collection of tugaraka beeja:

The mature fruits of 'Tugaraka' were collected from two well grown trees in the herbal garden 'Rajavana' of S. D. M. College of Ayurveda, Kuthpady, Udipi; and the oil extraction from those seeds was done in S. D. M. Ayurveda Pharmacy, Kuthpady, Udipi.

The total quantity of 'pakwa tugaraka phala' obtained was 12 kgs. The phala were gently pounded and the dry seeds inside were separated. The total quantity of good quality seeds obtained was 8 kgs. These seeds were evenly spread in two steel trays. These trays were placed daily under hot sun for a period of two weeks.

After drying the seeds for two weeks, the thin layer of wet pulp around the seeds was completely dry. At this point it was noted that the seeds were emitting pleasant characteristic fragrance.

Extraction of 'Tugaraka beeja taila'

Name of the practical : Extraction of 'Tugaraka beeja taila'

Reference :

Suishruta cikitsa sthana 13/18-24

Date of starting : 10/05/2013

Date of completion : 21/05/2013

Drugs required with quantity : *Tugaraka beeja*; 8 kgs

Apparatus required : *Khalva yantra*, grinding machine, stainless steel vessels, stainless steel spoons, gas stove and cloth.

Procedure:

Eight kilograms of mature 'Tugaraka beeja' were pounded well in a pounding machine. The 'snigdha curna' obtained was fed to the grinder. While grinding required quantity of water is added to the drug powder to get the mixture in rough paste form.

The paste obtained was 8.5 kgs. This paste was now taken in a bigger wide mouthed iron *kadhai*. This vessel was placed over mild fire and was added with 34 liters water (4 times of the drug) each time in succession while boiling. The boiling procedure was carried out with frequent stirring.

After cooking the mixture for approximately two hours, the 'Tugaraka beeja taila' appears on the surface of the liquid in globular form. The process of boiling is continued further until an appreciable layer of oil is seen on the surface of the liquid.

Later the fire was put off and the liquid was allowed to become stable. From the surface of the stable liquid, the supernatant oil layer was carefully skimmed off and collected in another stainless steel vessel.

The remaining liquid was further boiled and the same process of collecting the supernatant oil layer over the liquid surface was done for 3 times.

Precautions:

- Since the possible quantity of 'Tugaraka taila' extracted from 8 kgs of 'pakwa tugaraka beeja' is relatively more, one need to skim the supernatant oil layer more than once during the procedure.
- Each time the oil layer is formed above the boiling liquid, the fire has to be put off and the liquid is allowed to become stable. Now the oil layer from above

the stable liquid is carefully skimmed off and collected in another clean stainless steel vessel.

- Towards the end of the '*taila paka*', the process of continuous stirring has to be carried out in order to avoid burning of the oil.

Observations:

- Only after cooking the mixture for approximately two hours, the oil appears on the surface of the liquid in globular form. When boiled further the oil globules unite together to form an oil layer over the liquid.

Result:

The total quantity of oil obtained is as shown below;

Study	Drug Quantity	Quantity of oil obtained
Extraction of ' <i>Tuvaraka beeja taila</i> '	8 kgs of mature ' <i>Tuvaraka beeja</i> ' ;	
	A) The oil obtained from 1 st supernatant oil layer;	510 ml
	B) The oil obtained from 2 nd supernatant oil layer;	260 ml
	C) The oil obtained from 3 rd supernatant oil layer;	200ml
	Total quantity of ' <i>Tuvaraka beeja taila</i> ' obtained;	970 ml

Physical examination :



Colour	Pale yellow	Appearance	Oily viscous liquid
Odour	Characteristic	Touch	Greasy

Packaging and labelling of '*tuvaraka taila*':

The total quantity of '*Tuvaraka taila*' (970 ml) was packed in 10 ml dropper bottles with neat labeling and preserved for clinical use.

PHOTOGRAPHS

<i>Tuvaraka tree</i>	<i>Tuvaraka beeja</i>	<i>Tuvaraka phala</i>
<i>Weighing of tuvaraka beeja</i>	<i>Pounding of tuvaraka beeja</i>	<i>Preparation of tuvaraka beeja kalka</i>
<i>Tuvaraka beeja kalka added with 64 parts of water in succession</i>	<i>Collection of supernatant oil layer</i>	<i>Tuvaraka taila paka done from the skimmed off supernatant oil layer</i>

	
<p style="text-align: center;">Collection of oil</p>	<p style="text-align: center;">Tuvaraka taila packed in dropper bottles for clinical use</p>

Discussion:

Since 'Tuvaraka taila' is a potent healer of 'kushtha roga' (skin diseases) (*Su. Ci. 13 / 19 - 34*) and very less used in the therapeutic world of *Ayurveda* because of its 'teekshna guna' (strong inherent properties), the proper extraction of this oil from the seeds of 'tuvaraka' is essential to make the 'taila' user friendly.

The primary step here is to collect the best variety of 'tuvaraka' seeds. The classics references quote that the best variety of 'tuvaraka' is grown in the Western Ghats. From such trees the mature fruits of 'tuvaraka' are to be collected.

The total quantity of good quality seeds obtained out of total 12 kgs of 'pakwa tuvaraka phala' (ripe fruits of *Hydnocarpus pentandra* (Buch.-Ham.) was 8 kgs.

These seeds should be placed in a tray daily under hot sun for a period of at least two weeks to dry the moistness present around the seeds.

When completely dry, these seeds emit a pleasant characteristic fragrance that can be readily appreciated.

This eight kilograms of mature 'Tuvaraka beeja' were pounded well. The powder obtained was fed to the grinder along with required quantity of water to obtain the mixture in rough paste form (8.5 kgs).

The paste obtained was taken in a bigger wide mouthed iron vessel placed over mild fire along with 34 liters of water added in succession while boiling.

Up to 64 parts of water was added for complete extraction of oil from rough paste of the drug. The boiling procedure was carried out with frequent stirring.

After cooking the mixture for approximately two hours, the 'Tuvaraka beeja taila' appears on the surface of the liquid in globular form. The process of boiling is continued further until an appreciable layer of oil is seen on the surface of the liquid.

Later the fire was put off and the liquid was allowed to become stable. From the surface of the stable liquid, the supernatant oil layer was carefully skimmed off and collected in another stainless steel vessel.

The remaining liquid in the vessel was further boiled and the same process of collecting the supernatant oil layer over the liquid surface was done for 3 times.

Observations:

1. Only after cooking the mixture for approximately two hours, the oil appears on the surface of the liquid in globular form.
2. When boiled further, the oil globules on the surface of the liquid unite together to form a supernatant oil layer.
3. The quantity of oil obtained through the 1st, 2nd and 3rd supernatant layers of this procedure was 510 ml, 260 ml and 200 ml respectively.
4. In total the quantity of oil obtained during oil extraction was 970 ml.
5. The ratio of water added in succession eventually amounted to 64 parts of the drug quantity.

Conclusion:

1. The oil from the seeds of *Tuvaraka* (*Hydnocarpus pentandra* (Buch.-Ham.) was extracted as per classical reference (*Su. Ci. 13 / 19 - 34*).

2. The total quantity of 'Tuvaraka taila' obtained from 8 kgs of dried 'tuvaraka' seeds is 970 ml.
3. The ratio of water added during oil extraction eventually amounted to 64 parts of the drug quantity. Practically this ratio of water seems appropriate to extract the complete oil from the seeds of 'Tuvaraka'.
4. If the skimmed off oil layer contains any amount of moisture, the vessel containing the oil should be placed over mild fire and cooked until all the water content is lost.
5. Organoleptic characteristics of the obtained oil were; Color- pale yellow; Odor- not characteristic; Appearance- oily viscous liquid; and Touch- greasy.
6. Since 'Tuvaraka taila' is a potent healer of 'kushtha roga' (skin diseases) (*Su. Ci.* 13 / 19 - 34) and very less used in the therapeutic world of Ayurveda because of its 'teekshna guna' (strong inherent properties), the proper extraction of this oil from the seeds of 'tuvaraka' is essential to propagate and encourage its therapeutic use.
7. The extracted oil was later packed into 10 ml dropper bottles with neat labeling and preserved for further clinical study.

References:

1. *Acarya Sushruta, Sushruta Samhita, Nibandha Sangraha of Dalhanacharya* - commentary, *Acharya Triviktamatma Yadva Sharma* - editor, Chaukhambha Surabharati Prakashan, Varanasi, Reprint of 2008. P - 457, Pp - 824.
2. *Acarya Vagbhata, Ashtangahridaya, Sarvangasundara of Arunadatta and Ayurvedarasayana of Hemadri* - commentaries, Pandit Hari Sadashiva Shastri - editor, Chaukhambha Surabharati Prakashan, Varanasi, Reprint of 2007. P - 929, Pp - 956.
3. *Bhavamishra, Bhavaprakasha*, with the *Vidyotini* Hindi commentary Edited by *Bhishagratna pandit shri Brahma Shankara Mishra*, volume.2, 7th Edition, *Varanasi: Chaukhambha Sanskrit Sansthan*, 2000; Pp.836, p. 53.
4. *Shodhala, Gadani-graha*, with *Vidyotini* Hindi Commentary by *Sri Indradeva Tripathi*, Part.2, *Kayacikitsa khanda*; 3rd Edition, *Varanasi, Chaukhambha Sanskrit Sansthan*, 1990; Pp.871, p.758.
5. *Sharma, P. V., Priya Nighantu*, Chaukhambha Surabharati Prakashan, Varanasi, 2nd edition- 1995, P 30, Pp - 275
