



# IJAPC

Volume 11 Issue 2,  
2019

[www.ijapc.com](http://www.ijapc.com)

2350-0204

**GREENTREE GROUP PUBLISHERS**



## Pharmaceutical and Preliminary Analytical Study of *Trikatu Arka*

Namitha R Chandra<sup>1\*</sup>, Gazala Hussain<sup>2</sup> and Vinaykumar R Kadibagil<sup>3</sup>

<sup>1-3</sup>Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, India

### ABSTRACT

*Arka Kalpana* is the secondary preparation explained in *Bhaishajya Kalpana*, but according to *Arka Prakasha* it is considered one among the *Panchavidha Kashaya Kalpana* and is said to be the most potent. *Arka* is a unique preparation in which the water soluble active principles from herbal drugs are extracted through distillation method. *Trikatu Arka* is one among *Arka* preparation explained in the text *Arka Prakasha*. It is indicated in *Kaphajanyaroga* (Diseases of Kaphadosha), *Gulmaroga* (Tumour), *Medhoroga* (Hyperlipidaemia), *Sthoulya* (Obesity), *Shleepada* (Filiarisis) and *Pinasa* (Chronic cold). In the preparation of *Arka* the ratio of water varies based on the hardness and form of the drug. In this study an attempt has been made to prepare *Trikatu Arka* in two different ratios i.e., 1:10 and 1:2 to understand the difference in pharmaceutical changes and analytical parameters.

### KEYWORDS

*Arka Kalpana*, *Panchavidha Kashaya Kalpana*, *Trikatu Arka*, *Arka Prakasha*



**Greentree Group Publishers**

[Received 20/06/19](#) [Accepted 21/07/19](#) [Published 10/09/19](#)



## INTRODUCTION

*BhaishajyaKalpana* is an important branch of Ayurveda which deals with preparing and dispensing medicine<sup>1</sup>. *Acharyashave* developed the basic preparations i.e., *PanchavidhaKashayaKalpana*, they are *Swarasa*, *Kalka*, *Kwatha*, *Hima* and *Phanta*<sup>2</sup>. A range of secondary preparations like *Arka*, *Avaleha*, *Taila*, *Ghrita*, etc. are also explained. *Arka kalpana* is considered one among the *PanchavidhaKashayaKalpana* (*Kalka*, *Churna*, *Rasa*, *Taila* and *Arka*) by *Arka Prakasha*<sup>3</sup>, which is only the historical reference available regarding *Arka kalpana*. *Arka* is a unique preparation in which the water soluble active principles are extracted from different drugs through Distillation method<sup>4</sup>. *TrikatuArka* is one among *Arka* preparation explained in the text *Arka Prakasha*. The *Arka* prepared by *Shunti*, *Pippali* and *Maricha* is known as *TrikatuArka*. It is indicated in *Gulmaroga*, *Kaphajanyaroga*, *Sthoulya*, *Medoroga*, *Shleepada* and *Pinasa*<sup>5</sup>. For the preparation of *Arka* the drug and water ratio depends on the *Guna* of the drug. In the text *Arka Prakasha*, based on the nature of the drug (hard, soft, etc.) different ratio of water is mentioned for the preparation of *Arka*<sup>6</sup>. *Trikatu* comes under *Katina Dravya* (hard drugs), where drug and

water is mentioned as 1:2, then *Arka* is extracted by soaking the drug for eight *Prahara* (24 hrs) in sunlight and also in moonlight i.e., two days and two nights, then transferred into *Arka Yantrato* extract *Arka*<sup>7</sup>. In the present texts books of *Rasashastra* and *BhaishajyaKalpana*, the preparation of *Arka* is said to be the ratio of 1:10, where one part of drug and ten parts of water is used and *Arka* is collected about 60% of the total volume of the mixture used for distillation<sup>8</sup>. So, in this present study an attempt is made to prepare *TrikatuArka* on the basis of these two references and to see the difference in their organoleptic characters and physico-chemical analysis mentioned in standard operative procedure protocol of *Arka Kalpana*.

## MATERIALS AND METHOD

**Ingredients:** *Shunti*, *Maricha* and *Pippali* (Table 1)

**Ingredients:**

*Shunti*- 12g

*Maricha*- 12g

*Pippali*- 12g

Water- 700ml

**Method of preparation:** The ratio was 1:10, where 1 part was drug and 10 parts was water, where volume by volume ratio is adopted; so for 70ml of drug (36g) 700ml of water was taken. The drugs were



coarsely powdered and soaked in 300ml of water. The well soaked drugs were transferred to the distillation apparatus and remaining amount of water i.e., 400ml was added. This mixture was continuously

heated at the temperature of 70°C, till 60% of the distillate was collected i.e., 420ml of *TrikatuArka* was collected.

### Method of Preparation (Fig 1)



Shunti



Maricha



Pippali

Fig 1 Ingredients of TrikatuArka

### Preparation of Trikatu Arka of 1:10 ratio (Fig 2)



Soaked coarse powder of Trikatu (Overnight)



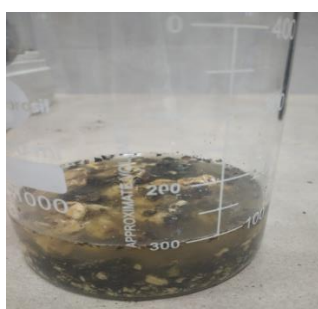
Process of Distillation



TrikatuArka of 1:10 ratio (420ml)

Fig 2 Preparation of Trikatuarka of 1:10 ratio

### Preparation of TrikatuArka of 1:2 ratio (Fig 3)



Soaked coarse powder of Trikatu (2 days and 2 nights)



Process of Distillation



TrikatuArka of 1:2 ratio (62ml)

Fig 3 Preparation of Trikatuarka of 1:2 ratio

### Ingredients:

*Shunti*- 12g

*Maricha*- 12g

*Pippali*- 12g



Water- 140ml

**Method of preparation:** The ratio was 1:2, where volume by volume ratio was taken. Thus, for 70ml of drug (36g), 140ml of water was taken. The drugs were coarsely powdered and soaked in 140ml of water and kept for two days and two nights. The well soaked drugs were transferred to the distillation apparatus and continuously

heated at the temperature of 50°C to obtain the *TrikatuArka* measuring 62ml.

**Dose:** 12- 24ml

**Anupana:** Water

**Indications:** *Gulmaroga* (Tumour), *Kaphajanyaroga* (Diseases of Kaphadosha), *Sthoulya* (Obesity), *Medoroga* (Hyperlipidaemia), *Shleepada* (Filiarisis) and *Pinasa* (Chronic cold).

**Properties of Dravya:**

**Table 1** Properties of drugs

<i>Dravya</i>	<i>Rasa</i>	<i>Guna</i>	<i>Veerya</i>	<i>Vipaka</i>	<i>Karma</i>
<i>Shunti</i> <sup>9</sup> (Zingiber officinale)	<i>Katu</i> (Pungent)	<i>Laghu</i> (Light), <i>Ruksha</i> (Dry)	<i>Ushna</i> (Hot)	<i>Madhura</i> (Sweet)	<i>Kaphavatahara</i> (Alleviates Kapha and Vata)
<i>Maricha</i> <sup>10</sup> (Piper nigrum)	<i>Katu</i> (Pungent)	<i>Laghu</i> (Light), <i>Tikshna</i> (Sharp)	<i>Ushna</i> (Hot)	<i>Katu</i> (Pungent)	<i>Kaphavatahara</i> (Alleviates Kapha and Vata), <i>Dipana</i> (Appetizer)
<i>Pippali</i> <sup>11</sup> (Piper longum)	<i>Katu</i> (Pungent)	<i>Laghu</i> (Light)	<i>Anushna</i> (Neither hot nor cold)	<i>Madhura</i> (Sweet)	<i>Kaphavatahara</i> , <i>Kasahara</i> (Alleviates Kapha and Vata)

## ANALYTICAL STUDY

The organoleptic characters like Appearance, taste and odour of both the

### Organoleptic characters:

**Table 2** Organoleptic characters of both the samples of *TrikatuArka*

Characters	<i>TrikatuArka</i> (1:10)	<i>TrikatuArka</i> (1:2)
Appearance	Colourless liquid	Colourless liquid
Taste	Characteristic taste	Characteristic taste
Odour	Characteristic pleasant odour	Characteristic pleasant odour

## DISCUSSION

*Arka Kalpana* is the secondary preparation but one among *Panchavidha Kashaya Kalpana* according to *Arka Prakasha*. From 18<sup>th</sup> century onwards these preparations were widely adopted in the books of

samples (Table 2) and physico- chemical analysis like pH Specific gravity, viscosity, TSS and refractive index (Table 3) have been done.

*Ayurveda*. All the drugs with essential volatile oils can be used to extract the distillate to retain the volatile principles to get them in the form of *Arka*.

*TrikatuArka* is one among *Arka Kalpana*, it is mentioned only in *Arka Prakasha*. Here



*TrikatuArka* was prepared in two different ratios i.e., 1:10 and 1:2 volume by volume method.

### Physico- chemical Analysis:

**Table 3** Physico- chemical Analysis of both the samples of *TrikatuArka*

Parameters	<i>TrikatuArka</i> (1:10)	<i>TrikatuArka</i> (1:2)
pH	5.12	3.20
Specific gravity	1	1
Viscosity	0.0118	0.0114
TSS	0.5	0
Refractive Index	1.35	1.34

These two ratios were selected based on the present authored texts books of BhaishajyaKalpana where the general ratio is mentioned as 1:10 and the reference of *Arka Prakasha* as 1: 2, where the ratio is said based on the nature of the drug. In *Arka Prakash* there is explanation regarding the specific ratio based on the quality of the drug used for *Arka* preparation. As *Trikatu* is a *Katina dravya* (hard drug as per the description in *Arka Prakasha*), the ratio mentioned is 1:2 and should be soaked for two days and two nights. The soaking of coarse powder of drugs aided in softening of the drugs and allows the active principles to get dissociated into water. The temperature was maintained at 50°C for the preparation where the ratio was 1:2, so that the drug remained in contact with water and to allow the heat energy to play a role to give sufficient time for the active principles to get extracted in the water medium. In the second *Arka*, the heat was maintained at

70°C as the ratio of water was more, higher the temperature was maintained. But the yield is comparatively less in 1:2 ratio (56%) compared in 1:10 ratio (60%), as the volume of water taken is less the *Arka* obtained is less.

The organoleptic characters of both the *Arka* are colourless liquid with characteristic odour and taste. Both the samples are acidic in nature, the pH of 1:2 ratio *TrikatuArka* is more acidic comparative with 1:10 ratio *TrikatuArka*, this refers that less amount of water provides more concentration in *Arka*. By the value of TSS, it is inferred that the *Arka* is a clear transparent liquid which is devoid of suspended solids as it is a distillate. Viscosity is 0.0118 and 0.0114, RI is 1.35 and 1.34 of 1:10 and 1:2 ratio *TrikatuArka* respectively and Specific gravity is 1 for both the samples. As the preparation is a water distillate the specific gravity and viscosity is that of water.

## CONCLUSION

*Trikatu Arka* is mentioned only in *Arka Prakasha*. For the preparation of *Arka*, different ratio of drug and water ratio is mentioned based on the nature of the drug. The present study of *Trikatu arka* was carried out by two different ratio, one the general ratio 1:10 and the other as 1: 2



based on the hardness of the drug. Trikatu *Arka* sample prepared in the concentration of 1:2 ratio was more acidic than 1:10 ratio *Trikatu Arka*. The two samples did not exhibit significant difference in the organoleptic characters. The other parameters like Specific gravity, TSS, Viscosity, RI values also had similar values as the formulation is a distillate prepared with water as the medium.

Further experimental studies will throw light on the efficacy of the same to conclude the ratio of water to be adopted for this *Arka*.



## REFERENCES

1. AngadiRavindra. A Text book of BhaishajyaKalpanaVijnana, 1<sup>st</sup> ed. Varanasi: Chaukhamba Surbharati Prakashan; 2009. p. 3.
2. Acharya Agnivesa. Caraka Samhita. Shuklavidyadar, Tripathi Ravidatta with VaidyaManorama Hindi Commentary, Vol 1. New Delhi: Chowkamba Sanskrit Pratisthan; 2006. p. 67.
3. Tripathi Indradeva. Arka Prakasha of LankapathyRavana, 2<sup>nd</sup> ed. Varanasi: Chowkhamba Krishnadas Academy; 2006. p. 9.
4. Angadi Ravindra. A Text book of Bhaishajya Kalpana Vijnana, 1<sup>st</sup> ed. Varanasi: Chaukhamba Surbharati Prakashan; 2009. p. 113.
5. TripathiIndradeva. Arka Prakasha of LankapathyRavana, 2<sup>nd</sup> ed. Varanasi: Chowkhamba Krishnadas Academy; 2006. p. 58.
6. Tripathi Indradeva. Arka Prakasha of Lankapathy Ravana, 2<sup>nd</sup> ed. Varanasi: ChowkhambaKrishnadas Academy; 2006. p. 20- 25.
7. TripathiIndradeva. Arka Prakasha of Lankapathy Ravana, 2<sup>nd</sup> ed. Varanasi: Chowkhamba Krishnadas Academy; 2006. p. 21.
8. Angadi Ravindra. A Text book of Bhaishajya Kalpana Vijnana, 1<sup>st</sup> ed. Varanasi: Chaukhamba Surbharati Prakashan; 2009. p. 114.
9. Anonymous. Indian Medicinal Plants, Edited by P K Warriar, V P K Nambiar, C Ramankutty, Vol 5. Chennai: Orient Longman Private Limited; Reprinted 2006. p. 435.
10. Anonymous. Indian Medicinal Plants, Edited by P K Warriar, V P K Nambiar, C Ramankutty, Vol 5. Chennai: Orient Longman Private Limited; Reprinted 2006. p. 297.
11. Anonymous. Indian Medicinal Plants, Edited by P K Warriar, V P K Nambiar, C Ramankutty, Vol 5. Chennai: Orient Longman Private Limited; Reprinted 2006. p. 290.