

**A REVIEW OF ARKA KALPANA WITH THE PREPARATION OF  
PATHYADI KWATH ARKA: - AN AYURVEDIC FORMULATION FOR  
ARDHAVABHEDAKA**

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**ABSTRACT**

**Aim and Objective-** To review the method of preparation of *Arka* from *Ayurvedic* literature and preparation of *Pathyadi Kwath Arka* by the same. **Methodology-** The base of *Ayurvedic* formulation “*Panchavidha kashay kalpana*” is mentioned in *Bhaishajya-ratnavali*. It comprises *Swarasa* (juice), *Kalka* (paste), *Kwath* (decoction), *Hima* (cold infusion), *Phanta* (Hot infusion). Modern formulations like capsules, syrups, soft gel capsules, drop formulations, etc. are popular nowadays. Some of these formulations are lack behind because of inappropriate study and lesser acceptances. Among them one is *Arka kalpana*. Author *Ravana* mentioned detailed explanation of *Arka kalpana* in the text ‘*Arkaprakash*’. Slight modification was made; he

mentioned *Panchavidha kashaya kalpana* as *Kalka* (paste), *Churna* (powder), *Rasa* (juice), *Tail* (oil), and *Arka* (extract). The potency of each formulation is more than the previous i.e. *churna* is more potent than *kalka* and so on; thus *Arka* is devoid of all *dosha*, having excellent properties. It is considered as best of all the formulations. *Shiirorogahara arka* mentioned in *Arkaprakash* contains same ingredient as in *Pathyadi Kwath* which is a proven formulation for *Urdhwajatrugata* disorders including *Ardhavabheaka*. Ingredients of *Pathyadi Kwath* are *Haritaki*, *Bibhitaki*, *Amalaki*, *Nimba*, *Bhunimba*, *Haridra* and *Guduchi* sincere effort is taken to review ancient literature on *Arkakalpana* and method of preparation of *pathyadi kwath arka*. **Conclusion-** *Arka kalpana* is a demand of the age. There arises a need to know the exact procedures and methodologies involved in the preparation of this formulation. The current study gives elaborative description about *Arkakalpana* which will definitely help in further research in the contest.

**KEYWORDS:** *Arkakalpana*, *Ravana's Arkaprakash*, *Pathyadi Kwath Arka*, Distillation process.

## INTRODUCTION

The '*Arka kalpana*' first of all was described by *Shodhal* in the 12<sup>th</sup> century. After that *arka* was used extensively and many books were written on it. According to API, The liquid preparation is obtained by distillation of certain liquids or drugs soaked in water using *Arkapatan yantra* or any convenient modern distillation apparatus.<sup>[1]</sup> Hence we can say a number of formulations or *arka* can be prepared as needed. This *arka* can be used as medicines as well as *anupana* for disease treatment. *Arkaprakash* text explains nearly about 388 types of *arka* as a single or compound drug formulation. *arka* can be the best substitute for a drug which is not palatable. One such formulation is *pathyadi kwath* mentioned in *sharangdharsamhita* for *ardhavabhedaka*.<sup>[2]</sup>

*Ardhavabhedaka* can be correlated with migraine characterized by pain in half side of the head.<sup>[3]</sup> According to *Charaka Vata* either alone or in combination with *Kapha*, seizes the one half of the head and causes *Ativedana* (acute neuralgic pain) in the sides of the *Manya* (neck), *Bhroo* (eyebrow), *Shankha* (temple), *Karna* (ear), *Akshi* (eyes) or *Lalatardhe* (the forehead of one side) is called *Arka*. This pain is very agonizing like that of a churning rod (red-hot needle).<sup>[4]</sup> Migraine documented as a chronic illness, the second most common cause of headache. Nearly 15% or approximately one billion people are affected by migraine. Though ample research is being carried out to alleviate the disease and new avenues are being explored for treating the early stage of the disease, there is no satisfactory treatment for Migraine. In this text, *Arka Kalpana* is given specific importance as it is the most potent due to *dosharahithatva* and its specific *gunas*. It has increased potency, reduced dose, more shelf life, easy absorption, fast action, and patient compliance. Here sincere effort has been made to find an easy and effective solution in the form of *Arka*.

## AIMS AND OBJECTIVES

To review the method of preparation of *Arka* from *Ayurvedic* literature and preparation of *Pathyadi Kwath Arka* by the same.

## METHODS

- Critical analysis of *Arka kalpana* studied from both aspects classical as well as modern methods.

- Preparation *pathyadi kwath arka* by the process of distillation.

### Method of *Arka* preparation according to *Arkaprakash*

Comprehensive description about the preparation of various *arka* is mentioned in the *Arkaprakash* right from apparatus required for *arka* preparation, process of *arka* preparation, up to the role of *agni* required, and removal of *durgandhi* from *arka* if any.

### Apparatus used in *Arka* preparation<sup>[5]</sup>

- The mud used for the preparation of *arka* consists of *loha churna* (iron powder), *gairik*, alum, *bhrushta mruttika*, red clay, bone powder, glass powder, *kaseesa*, etc. in equal quantities and mixed with equal quantity of cow's urine, horse, buffalo, goat, and elephants urine (*panchamutras*), then dried in sunlight till all smell of urine evaporate.
- Round shaped vessel is prepared to have the shape of *surya* mandala and entrance not less than 3 *Angula* with same sized lid for covering (lips of 3 *angula*). The air-tight environment is maintained with the sealing of *Jeernasthi mruttika*. Create a hole on the upper lid with the opening of 3 *Angula* and seal it. Make 4 *Angula* circumferences over the upper lid so that water can be poured into it. One more opening with valve (with sealing) at the base of circumference so that warm water can be removed. *Arka patra* is kept below a large tube attached over the upper lid and kept in cold water. Fumes coming out of the pot are condensed and collected in this vessel. According to *Arkaprakash* wood used for burning should be dry but heavy, which can easily fit in one's fist (size) Ex *Khadir* or *babbul* tree bark.
- *Arka* extracted is collected in the pot made up of *Jirnasthi mruttika patra*, glassware, stoneware, or earthen vessel.

### 2. Process of *Arka* preparation (Methodology)<sup>[6]</sup>

Herbal raw materials used for the preparation of *Arka* are mostly classified into five groups. The classification was based on the consistency of drugs, the ratio of drugs and water varies according to different groups, but the basic principle will be the same.

1. *Atyanta Kathina* (extremely hard)
2. *Kathina* (extremely hard)
3. *Ardra* (juicy)
4. *Pallava* (leafy)
5. *Drava* (liquid)

1. *Atyant Kathin Dravya*

- They are coarsely powdered, soaked in twice quantity of water, and kept in the shade till the water dries and the drug turns soft.
- Then water is added equal to the quantity of drug and kept in sunlight or moonlight for 8 *praharas* (24 hours)
- Further transfer to *Arka yantra* to extract *arka*.
- Ex *chandana*

2. *Kathin Dravya*

- They are soaked in twice the quantity of water, kept in sunlight and moonlight for 8 *prahara* each (48 hours) decide according to the environment either cold/hot.
- Further transfer to *Arka yantra* to extract *arka*.
- Ex. *Yavani, Ajaji, Trikatu, Bhunimba*

3. *Ardra Dravya*I. *Saras Ardra Dravya* means with juice

- The *churna* is prepared from *naal* (stem) of these drugs and  $1/20^{\text{th}}$  part of the water is added and heated for one *muhurta* (48 minute)
- Ex *Vastuka, Sarshapa shaka, Nirgundi, Eranda, markava, dhatura*

II. *Nirasa Ardra Dravya* means without juice

- Add  $1/20^{\text{th}}$  part of water and kept for one *prahara*. Further transfer to *Arka yantra* to extract *arka*.
- Ex *Vata, Ashwatha, Kareera*

A. *Sadugdha*I. *Tikshna-*

- Add warm water in coarse powder of drug keep it for 3 days then smash it till *dugdha* disappear
- Further add 10 parts of water and transfer to *Arka yantra* to extract *arka* on low flame.
- Ex *Shatala, Vajra, Seunda, Shorini*

II. *Mrudu-*

- Add 4 parts of water and keep in sunlight, when water gets hot transfer to *Arka yantra* to extract *arka* on low flame.
- Ex *Arka, Kshirini*

4. *Pallav*

- Wash with  $1/100^{\text{th}}$  part of water keep in sunlight for one *ghatika*.

- Further transfer to *Arka yantra* to extract *arka*.
- Ex *Vasapatra*
- ✚ *Phala* (fruit) - *Mrudu / Atipakva phala* (ripen fruit): - Cut in small pieces and extract *arka* no need to add water. Ex *Amra*
- ✚ *Pushpa* (flower)-Add  $1/16^{\text{th}}$  part of water and transfer to *Arka yantra* to extract *arka*. Ex *Gulab*
- ✚ *Kashtha* (wooden part of tree)
  - Add  $1/80^{\text{th}}$  part of water to small pieces of *kashtha* and 4 parts of *sajjikshara* and *saindhava*, mix it properly again add  $1/40^{\text{th}}$  part water, and keep in sunlight for  $\frac{1}{2}$  yam
  - Further transfer to *Arka yantra* to extract *arka* when mixture becomes warm
  - Ex *Audumbar*, *Amra*
- ✚ After removal of accumulated *doshas* from *katuphala*, *chid kashta* wash it thoroughly with water again and again then add  $1/4^{\text{th}}$  part of water and extract *arka*.
- 5. *Drava* (liquid) –Extraction from liquid is done in iron vessels by the specific method mentioned in *Arkapraksh*.
- ❖ *Mamnsa Arka* (flesh extract) - Likewise according to the type of *Mamnsa* (*Kathina mamnsa*, *Ghana mansa*, *Mrudu mamnsa*) *SOP of arka preparation* is mentioned with different combinations. *Mamnsarka* has given more importance than other *arka* and compared with *amruta* of heaven
- ❖ *Madyarka*<sup>[7]</sup> (alcohol extract)- *Arka* extracted from *Anna dravya* (food) Ex *Yava*, *Godhuma*, *Shandaki*, *Rajika*, *Mulaka* etc. is called as *Madyarka*. Different types of *Madyarka* prepared by using various *Anna Dravya* as follow
  1. *Tushodaka* - *Arka* extracted from mixture of whole raw *Yava*
  2. *Sauvira*- *Arka* extracted from mixture of raw *Yava* without coating
  3. *Aarnala*- *Arka* extracted from mixture of raw *Godhuma* without coating
  4. *Dhanyamla*- *Shali churna* or *Kodrava*
  5. *Shandaki*- *Raika*, *Mulaka*, *Sarshapa* mix with *shali pishti*
  6. *Sukta*- Juice of *kanda*, *mula* and *phala* with *grita* and salt
  7. *Arishta*- Decoction of medicinal plant
  8. *Sura*- *Shali dhanya*
  9. *Varuni*- Mixture of *Punarnava* or *haritaki*
  10. *Pakvarasa madya*- *Arka* extracted from cooked sugarcane juice
  11. *Varuni madya*- *Arka* extracted from a mixture of *punarnava*

12. *Tamasa madya* for *nindita karma*, *Rajasa madya* for battle purposes, and *Satwika madya* for singing, and to create happiness.

**1. Role of Agni (fire) in Arka preparation:-**<sup>[8]</sup> In *Arkaprakash* six types of *Agni* is described for extraction of *Arka*,

- *Dhumagni*- Huge fumes without flames
- *Deepagni*- flames of *Dhumagni* increased 2-4 times
- *Mandagni*- flames of *Deepagni* increased 4 times
- *Madhyamagni* –Flames of *Mandagni* increased 2 times or

*Agni* between *Deepagni* and *Mandagni*

- *Kharagni*- five times of *Madhyamagni*, used for all- purpose
- *Bhatagni*- Flame spread all over the vessel

Based on duration required for the production of *arka* and heat given (*Arka nisaran kala*); it is divided into four Types

- *Sardha yama*:- 1<sup>1/2</sup> *prahar*-4.30 hours
- *Yama*: - 1 *prahar*- 3 hours
- *Yamardha*-1/2 *prahar*-1.30 hours
- *Muhurta*: - 2 *ghati*- 48 minute

1 *Prahar* - *Nyun Arka*,

2 *Prahar*- *Madhyam Arka*,

3 *Prahar*- *Shreshtha Arka*.

***Dhupana Karma* (procedure for removal of unwanted odor):**<sup>[9]</sup> -Keep your container containing *arka* in big vessel with a coating of *dhupana dravya* (Fumes of *Hingu*, *Jeera*, *Methi*, and *Rajika* mixed with *Grita*) so that pungent odor will be removed from *arka* and it will get a pleasant odor. This process is called “*Durgandha nissarana vidhi*”.

*Dhupana drug*a for different *dosha*

1. *Vata Dosh*- *Mahishakshadi panchaka* (*Guggulu*, *Rala*, *Sarjarasa*, *Krushna agaru*, *Lavanga*)
2. *Pitta Dosha*- *Chandana*, *Ushira*, *Karpur*, *Bakuchi*, *Ela*, *Kachur*, and *Dhamasa*
3. *Kapha Dosha*- *Jatamansi*, *Nakha*, *Tejapana*, *Lavanga*, *Tagar*, *Rasakarpura*, and *Gandhaka*

### Method of *Arka* preparation according to modern methods

*Arka nirman* is compared with the distillation process in modern science. Distillation is the process by which liquid is vaporized and recollected by cooling and condensing the vapor. It can be achieved by various types such as simple distillation, steam distillation, vacuum distillation, fractional distillation, and dry distillation (destructive distillation).

### Apparatus required for Distillation process

1. Boiler (Heating mantle) - To provide and maintain heat.
2. Vessel- In which vapors are produced by heating the liquid to its boiling point
3. Condenser-Cooling device of vapors by the circulation of water or air at atmospheric pressure.
4. E.g. Leibig Condenser, Worm condenser, Hallock block, Reflux Condenser, Soxhelt condenser.
5. Receiver-Used for collection of liquid.

**Method of preparation of *Pathyadi Kwath Arka*:** - Raw drugs were purchased from Malhar Ayurved drugs wholesale distributor, Nerul. Authentication of raw drugs carried out by Botanist (ref no. 08192131). Colorless extract prepared by using same drugs as in *pathyadi kwath* by the process of distillation.

**Table 1: Ingredients of *pathyadi kwath*.**

Sr. No.	Name of the drug	Botanical name of the drug	Part used	Proportion of the drug
1	<i>Haritaki</i>	<i>Terminalia chebula</i> (Retz).	Fruit	1 part
2	<i>Bhibhitaki</i>	<i>Terminalia bellirica</i> (Gaertn) Roxb	Fruit	1 part
3	<i>Amalaki</i>	<i>Phyllanthus emblica</i> (L)	Fruit	1 part
4	<i>Nimb</i>	<i>Azadiracta indica</i> (A. Juss)	Stem bark	1 part
5	<i>Bhunimba</i>	<i>Andrographis paniculata</i> (Burm)	Whole plant	1 part
6	<i>Haridra</i>	<i>Curcuma longa</i> (Linn)	Rhizome	1 part
7	<i>Guduchi</i>	<i>Tinospora cordiolia</i> (Lour) Merr	Stem	1 part

Preparation of *Pathyadi Kwath Arka* -Duration 1 hour 5 min

*Pathydi Kwath Arka* (extract) was prepared by using a standard method described in *Arkaprakash*<sup>[10]</sup> in *Rasashastra* and *Bhaishajya kalpana* department, D. Y. Patil School of Ayurveda, Nerul Navi Mumbai. *Arkaprakash* is the first *Ayurvedic* classical text in which various kinds of the distillation procedure and heating methods has mentioned for preparing *arka*.



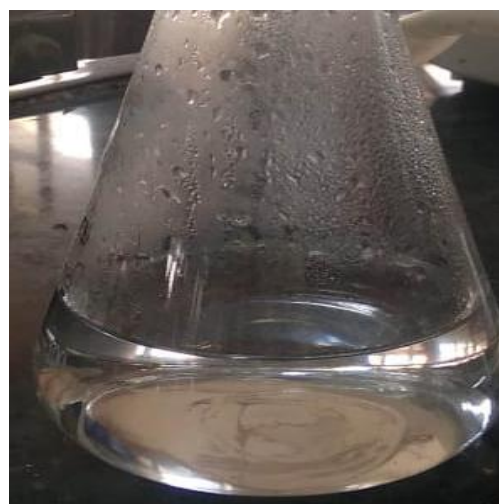
1. Total 210 grams of drugs (coarse) taken, each 30 grams soaked with twice quantity of water and kept overnight (12 hours), next day water is added equal to the quantity of drug and transferred to distillation apparatus. The vapors are condensed and collected in a receiver.
2. At start vapors consist of only steam and not essential principles of drugs, therefore discarded. The last portion also does not contain therapeutically essential substances and hence should be discarded.
3. Rest of the vapors collected in borosil jar as *arka*
4. Gradual (Medium to low) heat is supplied till the boiling point of water again heat is reduced, and the same temperature is maintained till desired quantity of *arka* is obtained.

**Table 2: The Total quantity of ingredients and yield obtained in the preparation of drug (i.e. 45%).**

Quantity of drugs	Quantity of water	Total weight	Quantity of final product	Commence ment time	Boiling time	First drop time	Finished time	Time required
210 grams	630ml	890gm	400ml	2.40pm	2.45 Pm	2.55 Pm	3.45 pm	1 hour 5 min



**Fig 1- Distillation Process.**



**Fig 2- Pathyadi Kwath Arka.**

#### Some facts about *Arka*<sup>[11]</sup>

- *Arka* extracted without using heat is more beneficial.
- The person who is trained in the extraction of *arka* is praised by others and he is never affected by diseases.
- If *arka* is having a pungent odor, make it pleasant with *dhupana* drugs for consumption



- Complication of impure consumption causes *glani*, *vamana*, and which can be treated with *vamana* or with *malati pushpa alasya arka*.

### ***Arka Prashasti lakshana (characters of good arka)***<sup>[12]</sup>

1. *Arka* should have more fragrance than its constituent drug i.e. *Dravyadhik saugandhyam*
2. On keeping in *jeerasthi mruttika patra*, the color of the drug must appear same. The *arka* must resemble the color of *shankha* (conch shell), *kunda*, *indu* (moon) on keeping in other vessels i.e. *Shankhkundendudhavallo*.
3. Taste of *Arka* while keeping on the tongue should be that of the constituent drug itself. All other *arka* opposites of the above features should be discarded. These are the beautiful standardization parameters for testing *Arka* in ancient literature i.e. *Jivhoparigataha swadam dravyabhavam*.

## **DISCUSSION**

In the current study, the sincere effort has been made to provide in brief but thorough description about *arkakalpana* given in text *Arkaprakash* as well as in *Ayurvedic pharmacopeia* of India. Detail of apparatus used both ancient (*Arkapatana yantra*) and modern (Distillation apparatus) is explained. Process of extraction of *arka* from different drugs rather from a different form of drug i.e. hard, extremely hard, soft, very soft drug are explained. Complete elaboration about different types of Agni (heat) required during extraction of *arka*, Qualities of good *arka*, *Dhupana karma* to remove foul smell from *arka* is mentioned in the study.

The method of preparation of *pathyadi kwath arka* by the process of distillation is described. The total yield obtained was 45%. The drug in the form of *arka* will be the best substitute for that form which is not palatable and serves to be the cause of patient's dropout. A misconception among the population about *ayurvedic* medicine that they can't be consumed easily and are not children friendly can get rid because of such form of drug i.e. *arka*. Among various formulations *arka* is the best gift to *Ayurvedic* Medicine

## **CONCLUSION**

*Arkaprakash* main authentic text still elaborates all aspects of its preparation right from collecting good quality raw drugs to the proper water quantity required for soaking, to the right amount of heat that will be required for its preparation. And finally, *prashasta arka lakshana* tests the prepared *arka* for its quality and purity. The importance of *Arka kalpana*

(utility) can be explained in terms of better shelf life than *swaras*, *kalka*, *kwatha*, etc, easier in administration in patients who don't like to take *churna*, *kwatha*, and also for *Mridu prakruti* people (good palatability). *Arka* is prepared by combination of *Jal* and *Agni* hence it is *laghupaki*, *vyavayi* and *vikasi* in its *gunas*. Hence *arka* can be used widely.

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