WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 11, Issue 15, 685-701. Review Article ISSN 2277– 7105

ARKA KALPANA: A CONCEPTUAL STUDY

Dr. Shankar*[1], Dr. Radhika Injamuri[1], Dr. Suryanarayana M.[2] and Dr. Susantakumar Barika[3]

PG Scholar[1&3], Asso. Prof[2&1], Dept of Kaumarabhritya, SJG Ayurvedic Medical College and Hospital, Koppal, Karnataka.

Article Received on
15 Sept. 2022,

Revised on 06 October 2022,
Accepted on 27 October 2022

DOI: 10.20959/wjpr202215-26108

***Corresponding Author**
Dr. Shankar
PG Scholar, Dept of Kaumarabhritya, SJG Ayurvedic Medical College and Hospital, Koppal, Karnataka.

ABSTRACT

In Ayurveda many formulations have been explained in all kind of samhitas. Among the large number of formulations specified by Acharya, the panchavidha kashaya kalpanas have great importance as they form the primary or basic dosage forms from which other secondary dosage forms are prepared. Arka kalpana is a very unique formulation in ayurvedic pharmaceutics for its method of preparation and efficacy. According to Ravana's Arka Prakasha, the Panchvidha kalpanas include Kalka, Choorna, Rasa, Taila and Arka. Arka kalpana is given specific importance and it opines that it has more potency in comparison to the other kalpanas. It is most potent due to dosharahithatva and its specific gunas. Arka have more potency, less dose, more self-life, easy absorption, quick action and patient compliance. Due to these reasons, it is very popular now a days. In preparation of arka specific yantra, agni, patras and different methods and consistency of drug are important. Now a days, distillation apparatus is used for preparation of arka. In this article along with preparation of arka, other different types of arka are also explained.

KEYWORDS: Panchavidha kashaya kalpana, Arka, Distillation, Shushka kasahara arka.

INTRODUCTION

The different branches of Ayurveda have evolved over the long period as health being mainly concerned with keeping the body fit and preventing as well as curing the diseases, which were its main objective. Every dravya can be a medicine but some pharmaceutical procedures are done to change or potentiate its original properties. The basic idea behind the administration of drug is to make it more suitable to the body elements. To achieve this, many

processes were invented in a sense of manufacturing process, these are termed as Kalpanas. With the various health benefits, arka kalpana is considered as best among ayurvedic preparations. It is introduced in pharmacy of Ayurveda in later part of development, which is very specific in its mode of preparation and due to virtue of this particularity; it may have all volatile active substances in effective form in its final product. It is more palatable form of Ayurvedic dosage forms in comparison to Swarasa, kalka, kwatha etc. In Arka Prakash various kinds of Procedures and heating are mentioned for preparing Arka from different type of Dravya. Arka Kalpana is correlated with Distillation in modern pharmaceutics practices.

ARKA KALPANA

DEFINITION

The method by which the volatile oil and active principles of the drug are collected is called as Arka-kalpana and the compound prepared through this procedure is called as Arka (Shabdakalpa dhruma).

HISTORICAL REVIEW

Arka Kalpana was first mentioned in "**Gada Nigraha**" by Acharya **Shodala**. We don't get any reference in the brahatrayis regarding arka Kalpana. We get another reference about arka in **Sahasrayoga**.

Detailed explanation about Arka Kalpana is given in "**Arka Prakasha**" which was written by Ravana.

Arka Prakasha- considered as a compressive referral book for Arka Kalpana is concerned.

It is widely described by Ravana in his book Arka prakasha. In this book, different ratios for distilling, reference for **196 single** drugs and 192 aushadha yogas for preparation of Arka with their indication is described.

In **Ayurveda Sara Sangraha**, there are 25 Arkas explained with their ingredients, methods of preparation, indication and dose.

CLASSIFICATION

A. Classification according to contents

1. **Sthira arka**: Extraction of Arka from the drugs with non-volatile oil. E.g. Dashamula, Triphala etc.

2. **Gandha arka**: Extraction of Arka from the drugs having fragrance or volatile oil e.g. Ajmoda etc.
3. **Drava arka**: Extraction of Arka from the liquid drugs. E.g.-Gomutra, etc.

B. Classification according to duration of preparation

1. **Nyune**: Prepared in 1 Prahar (3 hrs)
2. **Madhya arka**: Prepared in 2 Prahar (6 hrs)
3. **Shreshitha arka**: Prepared in 3 Prahar(9hrs)

C. Classification according to part used

1. Pushpa arka
2. Kshiri vriksha arka
3. Tail dhanya arka
4. Tandul arka
5. Satu dhanya arka
6. Visha varga arka
7. Sugandha gana arka

D. Modern classification of distillation process[1]

1. Simple distillation.
2. Vacuum distillation
3. Fractional distillation
4. Steam distillation
5. Destructive distillation (Dry distillation)

IMPORTANCE OF ARKA KALPANA[2]

“Dravya kalpaha panchadashyat kalka churna rasastatah|

Tailamarka kramatgneyam yathottaram gunam priye ||” (A.P 1/46)

In this shloka Ravana mentions about panchavidha kalpanas and also explained that there will be increased in potency in uttarottara kalpana which means kalka, churna, rasa, taila and arka have potency in increasing order which means arka is having highest potency.

Method of preparation

The details of the method of preparation of Arka kalpana is taken from Ravana’s Arka prakasha.

Method of Arka preparation according to Arka prakasha

The textbook of Arka prakasha gives detailed information, right from collection and preparation of equipments required for arka preparation, up to how to remove durgandhi from Arka if any.

We can divide these steps into following categories—

- Apparatus used in Arka preparation
- Process of Arka preparation (Methodology)
- Role of Agni in Arka preparation

1. Apparatus used in Arka prepartion

Mud

Details of mud used for preparing Arkapatana yantra is as below. The mud should consists of loha churna (iron powder), gairik, alum, bhrushta mruttika, red clay, bone powder, glass powder, kaseesa etc. All should be taken in equal quantities and should be mixed with equal quantity of cow's urine, horse, buffalo, goat and elephants urine (panchamutras). It should be dried in sunlight till all smell of urine goes off and then this clay is used in preparation of apparatus (Arkapatan yantra).

Characteristic of Arkapatana yantra

Using above mud the round shaped vessel is made whose mouth should not be less than 3 Angula with shape of Surya mandala. Same sized lid to cover the pots mouth with lips of 3 angula. Jeernasthi mruttika is used to seal edges to make the apparatus air-tight. A Bamboo tube one small another double of 1st is inserted in the pot (4-5 angula inside and sealed with clay). Arka patra is kept below large tube which is kept in cold water. Fumes coming out of pot are condensed and collected in this vessel. Arkaprakash also explains type of wood to be used for burning- It should be dry but heavy, which can easily fit in ones fist (size). E.g Khadira tree bark, or babbul tree bark.

2. Process of Arka preparation (Methodology)

Arkaprakasha explains various method of Arka preparation according to consistency of drug and type of drug.

But the basic principle of urdhvapatana remains same in all types of dravyas only there is difference in water quantity and duration of soaking.

3. Role of Agni in Arka preparation[3]

Agni type	Characteristic and duration of heat
1. Dhumagni	Without flames, there are huge fumes- 1:1/2 prahara (4:1/2 hr)
2. Deepagni	Flame of Dhumagni is increased 2 to 4 times- 1 prahara (3 hr)
3. Mandagni	Flame of Deepagni is increased 4 times- 1/2 prahara (1:1/2 hr)
4. Madhyamagni	Agni in which flame is in between deepagni and mandagni- 1 muhurta
5. Kharagni	5^{th} part of complete agni, used for all purposes – 1 muhurta (45 min)
6. Bhatagni	Agni in which flame spreads all over the bottom of the vessel

Method of Arka preparation according to modern methods

In modern aspects Arka nirmana is compared with Distillation process.

Distillation is the process by which liquid is vapoursied and recollected by cooling and condensing the vapour.

It can be achieved by various types such as- Simple Distillation, Vacuum Distillation, Fractional Distillation, Steam Distillation, Dry distillation (destructive distillation).

Standardization aspects according to today's point of view can again be divided in 3 categories as;

1. Apparatus used in Arka preparation
2. Process of Arka preparation (Methodology)
3. Role of Heat in Arka preparation

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. Condensor-Cooling device of vapour by circulation of water or air at atmospheric pressure. E.g. Liebig Condenser, Worm condense, Hallock block, Reflux Condenser, Soxhelt condenser.
4. Receiver-Used for collection of liquid.

Method of Arka preparation

As per API, process of Arka preparation by simple distillation is given as follows;

1. Drugs taken for Arka preparation are cleaned and coarsely powdered. Some quantity of water is added to it for soaking and kept overnight, this makes the drug soft and when boiled releases all essential principles easily.
2. The following Next day morning, it is poured in Arka yantra(Distillation apparatus) and remaining water is added and boiled. The vapour is condensed and collected in a receiver.

3. In beginning, vapour consists of only steam and may not contain essential principles of drugs. It should be therefore discarded.
4. The last portion also may not contain therapeutically essential substance and hence should be discarded.
5. The aliquots collected in between contains active ingredients and may be mixed together to ensure uniformity of Arka.

Role of Heat in Arka preparation

1. Heat causes two main processes during distillation, i.e. evaporation and another is cooling process or condensation.
2. The distillation apparatus should not be heated directly at high temperature which will cause rapid vaporization and required product will not be at par hence it should be heated gradually and then attend the boiling point of water.
3. Also there are chances of bursting the glassware if high heat is given initially.
4. After reaching the boiling point of water again heat is reduced, and then same temperature is maintained till desired quantity of arka is obtained.
5. This ensures good quality of Arka to be obtained at the end of the process. Distillation process depends on vapour pressure characteristics of liquid mixtures.

Apart from general method some special methods are also mentioned by Arka prakash. Viz.

1) Very hard drug
2) Hard drug
3) Fresh drug
4) Twig and
5) Liquid drug.

Arka of Dry drugs

Double quantity of water is added for soaked to the drug. It is kept over night or day. After that by using arka yantra, arka is obtained. About 60 % Arka is obtained. Quantity of water added is as follows;

-Dry and Soft drug: 6 - 8 times of water

-Dry and Moderately hard: 8 times of water

-Dry and Hard: 10 times of water

Arka of Wet Drugs

from Wet drugs about 60% arka is obtained. Quantity of water added is as follows;

-Wet and soft drug: 6 times of water

-Wet and mildly hard: 8 times of water

Arka of liquid drugs

Liquid Drugs are poured in Arka Yantra and Arka is prepared.

Specific method of preparation –The fivefold classification of drugs is Atyanta kathina(very hard), Kathina (hard), Ardra (wet), Pallava(tender leaves) and Drava(liquids). Different methods of preparation of arka are mentioned for different arkas. The types of drugs, quantity of water and example of each type are shown in table.[4]

Sr no	Type of drug	Quantity of water	example
01	Atyanta kathina	3 part	Chandana
02	Kathina	2 part	Ajamoda
03	Sarasa nala	1/20 part	Nirgundi, eranda
04	Patra	1/100 part	Vasa
05	Niryasa	1/20 part	Vata, ashwattha
06	Mrudu dugdhika	4 part	Dugdhika
07	Teekshna dugdhika	10 part	satala
08	Phala	0 part	Amra
09	Kashtoushadha	Add $1/80^{th}$ part of water, 4 times sarjikshara and saidhava. $1/40^{th}$ part of water is added to it	Udumbara
10	Atipakwa phala	0 part	Kadali
11	Pushpa	1/16 part	Gulab arka
12	Katu phala	1/40 part	Pippali
13	Drava dravya	0 part	Gomutra

TEST OF ARKA (Arka pareeksha)

Gives more fragrance than that of the actual drug from which the arka prepared.

When it is kept in Jeerna asthi paatra, the arka should be colorless, but slightly turbulent with Shankha kundendu/ Chandrama varna when kept in other vessels.

When it is consumed it must have the taste that of original drug.

General Dose of Arka – 12-24 ml[5].

Durgandhanashan Vidhi

If Arka is having bad smell then it has to be fumigate with Dhuma[6] produced by powder of Hingu, Methika, Rajika etc. mixed in Ghrita and then it should be kept in Navina patra.

Storage

Arka should be stored in airtight glass bottles- Any Arka if kept open and exposed to air will lose its volatile medicinal principle.

Precautions

- Arka yantra are sealed with mud and clay.
- Cool water is placed in upper portion. Water change from time to time.
- Flame should be medium.

STANDARDIZATION OF ARKA

According to API and CCRAS, following Standardization parameters are elaborated.

1. API- Arka is a suspension of the distillate in water with slight turbidity and colour according to nature of drugs used and smell of the predominant drug.
2. As per Pharmaceutical guidelines for analysis of Ayurveda and Siddha Formulations (CCRAS)- following analytical parameters must be tested for an Arka formulation.

Organoleptic parameters

- Color
- Odour
- Consistency

Physical parameters

- Ph
- Specific gravity
- Determination of boiling point
- Refractive index
- Optical rotation
- Viscosity

Chemical parameters

- Assay for essential oils
- Total acidity
- TLC/HPLC/HPTLC/GC/GC-MS
- Test for heavy metals- Lead, cadmium, mercury, arsenic
- Test for pesticidal residue- OCP, OPP, pyrethroids

- Microbial contamination- Total viable aerobic count, enterobacteriaceae, total fungal count.
- Test for specific pathogens- E-coli, Salmonella, staphylococcus aureus, pseudomonas aeruginosa

Recent Updates in ArkaKalpana

Jatamamsi Arka[7]

A clinical study of jatamamsi arka in management of essential hypertension was conducted. Here 1part of jatamamsimoola and kanda were soaked overnight in 25 times the quantity of water (1:25) and 60% of arkawas extracted. At a dose of 10ml twice daily, it proved highly significant in both reducing and normalizing systolic and diastolic blood pressure including the subjective symptoms like headache, giddiness, palpitations.

Bharangi Arka[8]

A clinical study on the efficacy of bharangimoola arka nebulisation in the management of tamakashvasa.In this study, bharangimoola arka was prepared with a drug and water in the ratio1:3. In a dosage of 5ml per 8th hourly as a nebulisation in vegavastha of Tamakashwasa (with respect to Acute Exacerbation of Bronchial Asthma) it showed statistically significant relief in the symptoms.

Vacha Arka[9]

Pharmaceutico-Analytical study of Vachaarka prepared by two different methods and Evaluation of its medhya effect. In this study, Vachaarka was prepared with 1:2 (A) and 1:3 (B) drug water ratios. Analytical study could generate quality standards for study drug.

The experimental study showed both the Arka have Medhya effect with Vachaarka A shows better in Anti-anxiety, Anti convulsant property and Vachaarka B shows better in CNS Stimulation activity, anti-stress, effect on learning and memory, problem solving ability , anti-amnesia.

Dronapushpi Arka[10]

An experimental study to compare the anti–inflammatory action of dronapushpi (Leucasaspera) swarasa and arka.In this study, DronapushpiArka was prepared with the proportion of 1:1/100th drug and water ratio. Analytical parameters of both arka&swarasa were documented as reference standards.

The prepared dronapushpi arka and dronapushpi swarasa were tested on albino rats for assessing its anti- inflammatory effect by Plythesmograph test in which both showed remarkable decrease in paw edema. Swarasa has shown more result compared to arka. But the observed effect was found to be statistically insignificant.

Amrutottara Arka[11]

Pharmaceutico analytical study of amritothara arka and its experimental evaluation of antipyretic effect in albino rats with different doses. In this study the arka was prepared from amrutottara kwatha churna in two different methods i.e 1:16 & 1:2 ratio of drug and water.

Both samples were tested experimentally for its antipyretic action (Yeast induced fever) on albino rats in different doses (48ml, 96 ml). Amrutottara arka 1:16 ratios were showing more significant reduction in temperature for experimental animals.

Parnayavani arka[12]

A clinical study to evaluate the swasahara karma of parnayavani Arka as a nebulization in the management of tamakaswasa with specific reference of acute exacerbation of Bronchial Asthma. In this study Arka was prepared from leaves of parnayavani by 1:2 ratio of drug and water. This parnayavaniarka when used as nebulization, showed equivalent effect to theophylline (standard drug) immediately after nebulization.

Further, significant decrease in chest tightness, breathlessness, wheezing, speech difficulty, cough, sputum production, pulse rate and respiratory rate were observed.

Triphala Arka[13]

A critical evaluation on preparation of triphala arka by following the standard operating procedure (S.O.P) was done. In this work triphala churna was prepared and analysed.

From same triphala churna arka was also prepared and analysed. After comparing pharmaceutical and analytical parameters, it was opined that the arka have better properties than the churna.

Daruharidra Arka[14]

In this research work, Pharmaceutico analytical comparison of daruharidraarkaand kwatha as aschothana drug were carried out. Daruharidra arka was prepared by powder of daruhardidra

and water in a rato of 1:20. Daruharidrakwatha was prepared by powder of daruharidra and water in a ratio of 1:8 and reducing to ¼ on mild fire.

Analytical study like PH, refractive index, specific gravity, organoleptic parameters were done for prepared arka and kwatha. When compared with kwatha, arka was colourless and clear. PH for arka was 6.76 and for kwatha it was 5.95. In comparision to pH of tear film which is 7.3-7.6, pH of arka is near to it. So it was opined that the arka is better choice than kwatha when used as aschothana in case of eye drops.

Medohara arka[15]

A comparative clinical study of medohara arka and medohara arka along with lekhana vasti on medovriddhi w.s.r. to hyperlipidaemia. In this study authors have taken as 2 groups and group 1 was given gomutra arka 30ml along with honey 10ml and group 2 same along with lekhanavasti.

BMI, Cholesterol, HDL, and LDL were assessed before treatment & after treatment of this study. Group 2 had shown good, moderate, mild and unsatisfactory result. Group – I had shown only 50% patients got mild improvement.

Gomutra Arka[16]

Immunomodulatory and antioxidant effect of gomutra arka in rats. Gomutra arka was procured from govigyananusandhansanthan,Deolapur. Two groups of rats, containing 6 animals each weighing between 150 to 250 grams were taken. The group I (control) was given normal food ad libitum for 21 days, where group II (GoA) was given gomutraarka at dose of 0.2 ml BD for 21 days along with food and libitum. This study shows that the gomutraarka has immunomodulatory and antioxidant effect.

Shushka kasahara arka[17]

Antitussive, antiasthmatic and antioxidant properties which are very necessary for curing the non-productive cough are present in the drugs used in this arka. Two groups containing 20 patients each were taken. Group-A was trail group given with ShushkaKasahara arka and Group-B was control group given with TusQ-dx. Study duration was 21 days and both the groups Had given almost equal result in treating the vataja kasa.

Other Different Arka Formulations

Sr.No	Formulation	Reference	Dose	Disease
1	Ajamoda Arka	Arkaprakasha, Sataka 3	12-24 ml	Agnimandya (digestive impairment), Ajeerna (dyspepsia), Vastiroga (disease of urinary system)etc
2	Karpuradyarka	Arkaprakasha, Sataka 4,	6-12 ml	Agnimandya (digestive impairment), Hrudroga (heart disease), Medoroga (obesity) etc
3	Jatamansyarka	Arkaprakasha, Sataka 4	12-24 ml	Agnimandya (digestive impairment), Unmada (mania/psycosis), Apasmara (epilepsy) etc
4	Satapusparka	Arkaprakasha, Sataka 3	12-24 ml	Agnimandya (digestive impairment), Adhmana (flatulence with gurgling sound), Sula (abdominal pain) etc
5	Pudinarka Chardi	AyurvedaSara Samgraha, (Arkaprakarana)	10-25 ml	Ajeerna (dyspepsia), Udarasula (abdominalpain) etc
6	Yavanayarka	Arkaprakasha,Sataka 3	10-25 ml	Trikasula (pain in sacroiliac region), Agnimandya (digestive impairment), etc
7	Kakamachyarka	AyurvedaSara Samgraha, (Arkaprakarana)	10-20 ml	Hridroga (heart disease), (Yakritroga liver disease), Udara roga (disorders of abdomen), Kamala (jaundice)etc
8	Kiratatiktarka	AyurvedaSara Samgraha, (Arkaprakarana)	25-50 ml	Jwara (fever), Pandu (anaemia), Raktapitta (bleeding disorder) etc
9	Guduchyarka	AyurvedaSara Samgraha, (Arkaprakarana)	20-50 ml	Amavata (rheumatoid arthritis), Vatarakta (gout), Jwara (fever), Raktapitta (bleeding disorder) etc
10	Chandanadyarka	AFI , Part-III, 2:5	30-60 ml	Paitikadaha (burning sensation due to pitta dosa), Jwara (fever), Daha (burning sensation)
11	Gulabarka	API,Part-II,Vol-3	10-20 ml	Daha (burning ensation),Trisna (thirst), Hrullasa (nausea) etc
12	Triphalarka	AyurvedaSara Samgraha, (Arkaprakarana)	20-50 ml	Prameha (increased frequency and turbidity of urine), Medobrudhi (obesity), Pandu (anaemia), Vibandha (constipation)etc
13	Dasamularka	AyurvedaSara Samgraha, (Arkaprakarana)	20-50 ml	Vatavikara (disease due to vata dosa), Sutika roga (puerperal disease) Shotha (inflammation), Gulma(abdominal lump) etc
14	Nilodupusparka	AFI , Part-III, 2:8	10-20 ml	Kasa (cough), Swasa (asthma)

				etc
15	Parpatarka	AyurvedaSara Samgraha, (Arkaprakarana)	10-20 ml	Jwara (fever), Atisara (diarrhoea), Daha (burning sensation), Vicharchika (eczeema),
16	Punarnavarka	AyurvedaSara Samgraha, (Arkaprakarana)	10-20 ml	Sotha (inflammation), andu (anaemia), Udara roga (disorders of abdomen), Yakrut Sotha (hepatomegaly)etc
17	Bramhyarka	AyurvedaSara Samgraha, (Arkaprakarana)	10-20 ml	Budhimandata (low intelligence), Smruti bhrama (disturbed memory), Pralapa (delirium) etc
18	Munditiktarka	AyurvedaSara Samgraha, (Arkaprakarana)	10- 20 ml	Pliharoga (splinic disorders), Prameha (increased frequency and turbidity of urine), Vatavyadhi (disease due to vata dosa), Twakroga (skin diseases) etc
19	Vanyajamodarka	AFI , Part-III, 2:13	10-20 ml	Agnimandya (digestive impairment), Ajeerna (dyspepsia), etc

DISCUSSION

Discussion is the heart of the study. So before discussing about the complete arka kalpana we will see about recent updates and studies done on the arka kalpana, some of them are mentioned in the following tables.

Details of Clinical studies undertaken in Arkakalpana

Name of the arka	References	Diseases
Parnayavani	Priyanighantu	Tamakashwasa
Medoharaarka	Text book of medicine-surendra k Sharma	Sthaulya Bilwadi yoga Bhaishjyaratnavali Vatajaabhishyanda
Jatamamsi arka	Arkaprakasha	Ucchavyana/hypertension
Bharangi moolaarka	Arkaprakasha	Tamaka shwasa
Medoharaarka	Rasa tantra sarasidhaprayogasangraha/ ayurvedasarasangraha	Hyperlipidemia
Shigrupallavaarka	Arkaprakasha	Kaphajaabhishyanda, Open angle glaucoma

Details of Pharmaceutical & Analytical studies undertaken in Arkakalpana

Name of the arka	References	Ratio	Results
Amruthaabheervadi	Ashtangahrudaya	1:10	Easy to administer
Haritakyadi	Kashypasamhita	1:10	More shelf life,easy to administer
Daruharidra	Arkaprakasha	1:20	Arka is better than kwatha

Vachaarka	Arkaprakasha	1:2	Maximum yield
Triphalaarka	Arkaprakasha	1:10	More properties than choorna
Chathurjathakaarka	Arkaprakasha	1:10 &1:5	Can be used as preservative
Mamsaarka	Arkaprakasha	-	-

Details of Experimental studies undertaken in Arkakalpana

Name of the arka	Ratio	References	Experimental model	Result
Dronapushpiarka	1: 1/100	Arkaprakasha	Anti-inflammatory	Yield and therapeutic efficacy was less
Gomutraarka	Procured	Arkaprakasha	Immune modulatory &anti-oxidant	Significant result got
Amritottaraarka	1:16 & 1&1:2	Arkapraksha	Antipyretic effect	Significant reduction in temperature
Shad rasa Arka	1:6	Arkaprakasha	Deepaniya&pachaniya effect	Marginal pachana effect,no deepaniya effect

Discussion on Shushka kasahara arka

- As we have already discussed about arka Kalpana indetail, it will be easy to understand the action of shushka kasahara arka.
- I have selected arka Kalpana because it is easy to administer, palatable and also because of its vyavayi, vikasi guna.
- It is very easier form for administration in children.

Action of drugs on respiratory system

- Kantakari is found to be beneficial in reducing breathlessness and cough in asthmatic patients owing to the depletion of histamine from lungs and expectorant action due to inorganic nitrate content.
- The powdered rhizome given in divided doses of 10gm to 25 patients with recurrent paraxysmol attacks of dysponea for 4 weeks (bronchial asthma) completely relieved dysponea, cough and restlessness in all the patients (Chaturvedi & Sharma, 1975).
- Vasicinone showed bronchodilation in vitro. Both in combination had more bronchodilatory activity in vitro and in vivo. Vasicine also exhibited respiratory and uterine stimulant activity and moderate hypotensive activity (IJMR, 1977, 66, 680).

The pellitorine type of isobutylamide was reported to exhibit significant antitubercular activity in vitro and the effect is about 20% of the potency of streptomycin.

- Gingerol, Zingrberenes, Zingeberol, Shogaol, isoproterenol, Essential oils are those which act on respiratory system.
- Poppy seeds are used as syrup in cough and asthma; as they are destitute of any narcotic principle, they are sprinkled over some sweet meats and largely used in confectionary; they are also used in insomnia.

Mode of action of drug in relieving the Vataja kasa

- The Drugs used in this arka preparation are having antitussive, antiasthmatic and also antioxidant properties which are very necessary for curing the non-productive cough.
- Among the 8 Drugs, 5 Drugs are having **Ushna veerya** which is beneficial in curing the respiratory disorders. Maximum drugs have **Kapha-vatahara** property and as Kasa is produced due to kapha and vata dushti, the kaphavatahara property will improve the condition.
- When we observe the karma of all the drugs used in this arka, all are having action on kasa and shwasa only. So when we prepare arka by using these drugs it has given good results in curing the vataja kasa I.e. nonproductive cough.

As the Arka kalpana is laghupaki, vyavayi and vikasi in nature, it will help to improve the condition in short duration only.

REFERENCES

1. Fundamental principles & process of pharmacy by Henry M. Durlage, Joseph, Charles & L.
2. Arka prakasha- Lankapati Ravanakrita, commentary by Indradev Tripathi, Choukhambha publications, Varanadi, Ed., 2006.1/46,9.
3. Arka prakasha- Lankapati Ravanakrita, commentary by Indradev Tripathi, Choukhambha publications, Varanadi, Ed., 2006.1/80.13-14.
4. Ravana, Indradev Tripathy, Arka prakash, 2 nd ed.Varansi, Chowkhamba Sanskrit Series, 1967; 99.
5. Pharmaceutical standards for Ayurvedic formulations, CCRAS publications, New Delhi, 1987.
6. The Ayurvedic Formulary of India (Part 3). 2011 Ed. New delhi: Govt of India, Ministry of Health and Family Welfare, Dept. of AYUSH, 2011; 28-36

7. MenonMaanasi. Clinical study on the effect of jatamamsiArka in the management of essential Hypertension(UcchaVyanabala).Sri DharmasthalaManjunatheswara college ofAyurveda and Hospital, Hassan, RGUHS, Bengaluru, 2013.
8. Sandrima k s. (2017). comparative clinical study on the effect of bharangimoolaarka as nebulization and oral intake in the management of tamakaswasa [acute bronchial asthma].Sri DharmasthalaManjunatheswara college of Ayurveda and Hospital, Hassan, RGUHS, Bengaluru.
9. K Priya.(2013).Pharmaceutico analytical study of VachaArka prepared by two different methods and evaluation of its Medhya effect. SriDharmasthalaManjunatheswara college of Ayurveda and Hospital, Hassan, RGUHS, Bengaluru.
10. Unnithan Rahul.(2014) .An experimental study to compare the Antiinflammatory action of Dronapushpi (LeucasAspera) Swarasa and Arka. SriDharmasthala Manjunatheswara college of Ayurveda and Hospital, Hassan, RGUHS, Bengaluru
11. P Deepthi.(2014).Pharmaceutico analytical study of AmruthotharaArka and its experimental evaluation of Antipyretic effect in albino rats with different doses. SriDharmasthalaManjunatheswara college of Ayurveda and Hospital, Hassan, RGUHS, Bengaluru
12. Gouthama A Pushya. (2018). A clinical study to evaluate the swasahara karma of parnayavaniArka as a nebulization in the management of tamakaswasa with specific reference of acute exacerbation of Bronchial Asthma. SriDharmasthalaManjunatheswara college of Ayurveda and Hospital, Hassan, RGUHS, Bengaluru
13. Sharma Aparna, Pillai K. Unnikrishna, MishraAbhaya Kumar. Pharmaceutico analytical comparison of DaruharidraArka And Kwatha as ascotana drug. International journal of research. ayurveda. pharm, 2017; 8(3): 141-144.
14. Sangolgibandeppa, Simpi Praveen et.al. Pharmaceutical study of Triphalaarka.pareyshana international journal of ayurvedicmedicine, 2017; 1(1): 26-38.
15. Sharma Aparna, Pillai K. Unnikrishna, MishraAbhaya Kumar. Pharmaceutico analytical comparison of DaruharidraArka And Kwatha as ascotana drug .International journal of research.ayurveda. pharm, 2017; 8(3): 141-1441.
16. D DGosavi, DSachdev, ksalwe. Immunomodulotory antioxidant effect of gomutraarka in Rats. researchgate, 2011; 16: 37-41.
17. Dr. Indradeva Tripathi, Arkaprakasha of Lankapati Ravana with hindi theeka and notes, 3rd edition, volume-panchamamshatakam, verse 44-45, Varanasi, Publication-Choukhambha Krishnadas Academy, 2011; 82. And Dr Shankar, Evaluation of antitussive

effect of shushka kasahara arka and TusQ-dx syrup in children with nonproductive cough-A randomized comparative clinical trail, dissertation work, SJGAMC, Koppal under RGUHS, 2022.