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Study on *Yavani Arka* Prepared by following Three Different References

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ABSTRACT

Arka kalpana is an important dosage form in Ayurveda and Unani systems of medicines, also used in other medicinal systems. Soaked drug with specific amount of water is placed in simple distillation assembly and the obtained distillate is considered as *Arka*. Ratio of drug, water and distillate varies according to drug by drug or in various texts. *Yavani* or *Ajawain* is very common herb, has important place in Indian kitchen spices. In scientific world it is known as *Trachyspermum ammi*. It is used to enhance the taste or interest in the food, for proper digestion, increase digestive fire and very commonly used as home remedy to cure common abdominal problems i.e. indigestion, stomachache etc. Various properties, indications and method of preparation are described in Ayurveda and Unani classical texts. Ratio of water, drug and *Arka* (distillate) is different in texts. An attempt has been made to evaluate the method and final product, among three samples prepared by following references of *Arka Prakasha* (AP), *Ayurveda Formulary of India* (AFI) and *National formulary of Unani medicine* (NFUM). Maximum yield was obtained by the method of AFI. The method of NFUM was looked well, where sufficient yield was obtained and after reviewing the characters, was looking better to extract the maximum amount of volatile oil or active constituents into the final produce. The *Arka* obtained by method of AP was very less in amount, but was very concentrated and strong in taste and odour, it may have highest potency.

KEYWORDS

Ajawain Arka, Arka Kalpana, Arq e Ajwain, Distillate of Trachyspermum ammi



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INTRODUCTION

Arka Kalpana can be defined as a liquid preparation obtained by distillation of certain liquids or of drugs soaked in water using *Arka yantra*¹. It is also mentioned in fundamental dosage forms by Ravan in *Arka Prakash*². *Arka* is distilled liquid dosage form and *Arkayantra* is classical distillation apparatus. In *Arka Prakash*, method of preparation of *Arka Yantra*³, fuel⁴, properties of drugs for selection and rejection⁵, vessels⁶, heating quantum for different drugs⁷, method of *Arka* preparation from variety of drugs i.e. herbal drugs⁸, Meat⁹, Stones¹⁰, Milk etc, types of *Arka*¹¹, testing parameters¹², Preservation technique¹³, therapeutic uses¹⁴, Adverse effects due to improperly prepared or contaminated *Arka* and their treatment¹⁵ are very systematically described. But for sophistication, now a day's distillation apparatus is assembled by using flasks, condenser, heating mantle, is used for *Arka* preparation. Clear references for preparation and therapeutic use of *Arka* are not available in Samhita grantha but some similar preparation methods are mentioned under some *Asava* and *Arishta*^{16,17,18}. *Arka Prakash* is a book which is basically dedicated to *Arka*. It is used therapeutically in Ayurveda as well as Unani system of medicine also. So also in literature of Unani

medicine properties and method of preparation are mentioned¹⁹. For uniformity, Ayurveda formulary of India has also described the method of preparation²⁰. After reviewing these all references, it is found that proportion of raw drug, water to be used and received distilled *Arka* are different, so with the purpose to find the best method by which best quality of *Arka* obtained, the present study has been planned. Generally drugs having their active component in volatile oil are subjected for *Arka*. *Yavani* (*Trachyspermum ammi*)²¹ is one of this type and very commonly used home remedy for abdominal discomfort and its powder and *Arka* are also used in clinical practice in Ayurveda²² and Unani system of medicine²³. So it is chosen for study

MATERIALS & METHODS:

Raw drug: *Yavani* was procured from Pharmacy, National Institute of Ayurveda, Jaipur. Distilled water was taken from Drug testing laboratory, Department of Rasashastra & Bhaishajya Kalpana, National Institute of Ayurveda, Jaipur.

Instruments: Round bottom flask, Heating mantle, Condenser, Receiver Flask, Rubber tube. Stands, Clamps etc.

- Genuine *Yavani* (fruits) was taken from the Pharmacy, NIA Jaipur and were



analyzed to test its authenticity in the Drug testing laboratory, Department of Rasashastra & Bhaishajya Kalpana, NIA, Jaipur. The drug was tested for

Macroscopic, Microscopic and Physico-chemical parameters and were compared with standards mentioned in Ayurvedic Pharmacopeia of India²⁴ (Table 1).

Table 1 Standard and observed physico-chemical characters of *Yavani*

S.No.	Physico-chemical parameter	API standards	Sample (Analyzed)
1.	Foreign matter (Total %)	Not more than 5%	2
2.	pH (10% aqueous solution)	Not mentioned	3.5
3.	Total Ash (% w/w)	Not more than 9%	7
4.	Acid insoluble ash (% w/w)	Not more than 0.2%	0.18
5.	Water soluble extractive (% w/w)	Not less than 13%	14
6.	Alcohol soluble extractive (% w/w)	Not less than 2%	1.9
7.	Volatile oil (% v/w)	Not less than 2.5 %	2.6 %

- After Confirmation of authenticity, the *yavani* were crushed and made into coarse powdered (10/44 sieves).
- Three samples of *Arka* were prepared with three different references i.e. Arka Prakash, Ayurveda formulary of India

and National Formulary of Unani medicine where in all these references ratio and quantity of *Yavani*, water (taken) and *Arka* (Distilled) are different as mentioned in Table No 2 & 3.

Table 2 The ratio of *Yavani*, Water and distillate according to various text

Reference	Ratio of		
	<i>Yavani</i>	Water taken	<i>Arka</i> (Distillate)
Arka Prakash ²⁵	1	2	Not mentioned. (Till <i>Prashsta Arka</i> Obtained ²⁶)
Ayurveda formulary of India ²⁷	1	18	15
Unani system of Medicine ²⁸	1	12	6

Table 3 Quantity of *Yavani*, Water and distillate according to various text

Reference	Quantity of		
	<i>Yavani</i>	Water taken	<i>Arka</i> (Distillate)
Arka Prakash	32 gm	64 ml	25 ml
Ayurveda formulary of India	16.6 gm	300 ml	250 ml
Unani system of medicine	41.66 gm	500 ml	250 ml

- Same method of preparation was followed in all of the above references.
- Coarse powder of *Yavani* was kept for overnight soaking, for this half amount of mentioned water in each case was added. The next morning remaining water was added into it and transferred into round bottom flask. It was placed over heating

mantle and distillation apparatus was assembled. Receiver flask was marked upto the amount of *Arka* which will be extracted. After marking and assembly, the mantle was started for heating, temperature was gradually increased upto 100°C and kept for 30 minutes then it was reduced to 50°C and was maintained throughout the procedure



till appropriate quantity of *Arka* obtained. Then the *Arka* was preserved in air tight container and marked as Sample 1 (*Arka Prakasha*), Sample 2 (*AFI*) and Sample 3 (National formulary of Unani medicine).

- After preparation of *Arka* all the three samples were analyzed for organoleptic and physico-chemical characters (i.e. pH, Specific gravity & refractive index) in the Drug testing laboratory, Department of Rasashastra &

Bhaishajya Kalpana, NIA, Jaipur and the results were recorded.

RESULTS

Arka Obtained:

Sample 1 (*Arka Prakash*) - 25 ml; Duration: 5 hrs.

Sample 2 (*AFI*) - 250 ml; Duration: 7 hrs.

Sample 3 (*NFUM*) - 250 ml; Duration: 7 hrs. 30 min.

Analytical tests

Table 4 The characters of *Yavani Arka* (3 samples)

Character	Sample 1 (A.P.)	Sample 2 (AFI)	Sample 3 (NFUM)
Color	Transparent	Transparent	Transparent
Odour	Typical <i>Yavani</i> like (Strong)	Typical <i>Yavani</i> like	Typical <i>Yavani</i> like
Taste	<i>Tikta</i> (Strong)	<i>Tikta</i>	<i>Tikta</i>
Appearance	Clear watery	Clear watery	Clear watery
Clarity	Floating oil drops	Floating oil drops	Floating oil drops
pH	3.8	3.7	3.5
Specific Gravity	1.001	1.004	1
Refractive index	1.334	1.34	1.33

DISCUSSION

For different purposes and according to physical and therapeutic properties of the drug, various dosage forms were developed by scholars of different medicine systems. In Ayurveda, there are five fundamental dosage forms which are known as *Panchavidha Kashaya Kalpana*²⁹ which are *Swarasa*, *Kalka*, *Kwatha*, *Hima* and *Phanta*. Among these *Hima* and *Phanta* are used for the drugs which are having volatile or aromatic matter as their active part. But the problem with all these formulations **are required** to be taken instantly so now longer

shelf life, sometimes these are difficult to swallow due to unpleased taste or appearance and the dose is also high. So considering all these the scholars developed *Arka*, a unique dosage form for overcoming to all these problem. It is pleasant in appearance, odour and taste so palatability increases and the shelf life is also higher which is 6-12 months^{30,31} or till the presence of *Prashasta Arka* properties³². Various therapeutic properties and uses of *Yavani Arka* **are described in** Ayurveda and Unani medicine system, but no research work has been done on its preparation



method, so the present study was planned. Hence the *Arka Yantra* or *Arka Patna Yantra* has been mentioned in Ayurveda classics but now a days and in the present study sophisticated distillation apparatus is used, because of some draw backs of *Arka Yantra* such as its complex preparation method, difficulty in getting raw materials and *Mritika* to manufacture *Yantra*, easily breakable, leakage of vapour, lack of experts having knowledge of manufacturing *Yantra*, etc. so distillation apparatus is preferred.

Coarse powder of the drug was soaked in water for overnight, so that the drug becomes soft and Ark can be easily extracted out of it. After boiling the temperature was maintained at 50°C for evaporation of volatile substance and after 35-50 minutes distillation was started. Ark was collected according to the guide lines given and the reference followed and further heating was stopped. As per *Arka Prakash*, amount of water for *Kathina dravyas* i.e. *Yavani* is told to be taken twice of the drug, while preparing on the small scale i.e. at laboratory level for experimental study it was that found to be quite difficult to distill such small amount of Ark as heating to the small quantity of the water may cause the charring and some turbidity is also seen. Among all of the references, method of Unani system of

medicine seems better, where water quantity and distilled *Arka* looks sufficient that it can drain maximum volatile oil from the drugs, characters of the *Arka* also support the same.

CONCLUSION

After reviewing the results of study it is found that maximum quantity of *Arka* has been obtained by following the method of Ayurveda formulary of India. Lowest quantity of *Arka* was obtained by the method of *Arka Prakasha*. After analyzing the results and characters of all three samples it can be said that method of National Formulary of Unani Medicine was found better and looks enough to extract the maximum drainage of volatile oil from the drug. Although, the *Arka* obtained by the method of *Arka Prakash* was concentrated and strong in taste and odour, so it may have higher potency in minimum dose. It is suggested for area of further research to evaluate the samples by using more sophisticated instrument or clinical or animal trials for coming on clearer conclusion.

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