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Clinical Efficacy of *Pathyadi Kwath Arka & Katphala Churna Nasya* in the Management of *Ardhavabhedaka* with special reference to Migraine - A pilot Study

Research Article

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Abstract

Ardhavabhedaka can be correlated with migraine having similar symptom as half-sided headache. It is mentioned as *tridoshapradhana* by *Sushruta* and *vatakaphapradhana* by *Vagbhata*. *Pathyadi Kwath* is a proven formulation for *urdhwajatrugata* disorders including *Ardhavabheaka.* In addition, importance of *Nasya* karma in *shirogata vyadhi* cann't be ignored so here *pradhamana nasya* with *kataphala churna* mentioned in *Yogaratnakara* is selected to evaluate its efficacy. Aim & Objective: The present study aimed to evaluate the clinical efficacy of *Pathyadi Kwath Arka* & *Katphala Churna Nasya* in the management of *Ardhavabhedaka* with special reference to Migraine. Material and method: The fruit of *haritaki, bibhitaki, Amalaki,* stem bark of *nimba*, whole plant of *bhunimba*, rhizome of *haridra* and stem of *guduchi* were used for the preparation of *Pathyadi Kwath* and its extract (*arka*) was prepared using the same ingredients by the process of distillation. Course powder of Kataphala was prepared in grinder, then filtered from mesh size 500 micron (BS 30, ASTM 35) and smooth powder of *Kataphala* obtained. Botanists carried out authentication of drugs. The study conducted on 10 samples for the duration of 12 weeks. *Pathyadi kwath* given in the dose of 10 drops/ 10 ml of water and *kataphala churna pradhaana nasya;* morning and evening daily. Result: Statistically significant p value was noted i.e.($P<0.05$), the null hypothesis is accepted, hence it is clear that all the parameters show a significant difference in the observations (before treatment and after treatment). Conclusion: *Pathyadi Kwath Arka* & *Katphala Churna Nasya* is effective in the management of *Ardhavabhedak.*

Key Words: *Ardhavabhedaka***,** Headache, Migraine, *Pathyadi Kwath Arka*, *Katphala churna, Pradhamana nasya*.

Introduction

"Shira" described as one of the three *marma*. (1) It has given prime importance to being the site of *prana* (vital force) & sense organs. (2)*Acharya Charaka* has mentioned ten sites of *prana* among which there are two-*shankha pradesha* and one *shira*. (3)Conduction of impulses from different parts of the body carried out by *Majja tantu* (nerves) via *prana vayu* (vital energy). *Tarpaka kapha (Majja dhathu)* provides nutrition to the important structures in the brain & heat regulation achieved with *bhrajaka* pitta. *Acharya vagbhata* described the body as *Urdhwamoola adhoshakha* i.e. *shira* considered as *moola* (root) and body as branches. (4) In order to raise tree nourishment and care of roots is very necessary; they are responsible for the stability of the tree. Vital points in *shira (shirogata marma)*, nerves (*Majjatantu*) are responsible for bodily movement, metabolism, stability, and protection. Any trauma or disease of the head can affect the overall health of the body.

Sushruta explains 11 types of *shiroroga. Viz vataj, Pittaj, Kaphaj, Sannipataj, Raktaj, Krimij, Kshaya, Suryavarta, Anantavata, Ardhavabhedak, Shankhak.(5)* The disease in which headache is a prime symptom is known as *shiroroga*. The name is not given according to the site of the disease, so *sushruta* does not mention nine-kapalagata *roga* in *shiroroga* for not having *shira shoola* but *vagbhata* explained these 9 diseases in *shiroroga* as *kapala rogas. Vaghbata* has given 10 *shirogata* and nine *kapalagata roga*, he has not mentioned *ananatavata* and *kshayaja shiroroga* rather explain *shirokampa*.(6) Among these *Ardhavabhedaka* is commonly seen to affect the young population because of the increased etiological factors like consumption of dry bakery items in excess, keto diet in teenagers to reduce weight, long hours working in AC, suppression of natural urges, excess workout in gym, etc. *Ardhavbhedaka* can be correlated with migraine characterized by pain in half side of the head. (7) 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

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forehead of one side). This pain is very agonizing like that of a churning rod (red-hot needle). If the condition becomes aggravated, it may even deteriorate the *Nayana* (eye) and *Karna* (ear). (8)

Migraine documented as a chronic illness, the second most common cause of headache. Nearly 15% or approximately one billion people affected by migraine. It is more common in women 19% than men 11% (9) during early stages, migraine becomes more common among females (10) and persists for the rest of the lifespan, and more common among elderly females than males. (11) The pain of migraine often occurs on one side and occasionally spreads to affect the entire head thus the word migraine have close resemblance with Greek word Hemicrania, meaning "half of the head". The term "migraine" refers to a disorder of vascular spasms of the cranial blood vessels. Usually, an episodic headache is associated with certain features such as sensitivity to light, sound, movement; nausea, vomiting, and headache. (12) The pattern of disease has grossly changed with the arrival of modern drugs, but the drugs only reduce the symptoms temporarily and the underlying pathology goes on progressively worsen the condition. 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.

So here sincere effort in the form of a pilot study was taken to evaluate the clinical efficacy of *pathyadik wath* in the form of *Arka* (13) and *kataphala churna*(14) were selected for the present study used in the treatment of *Ardhavabedaka.*

Rationale / Need of the study:

Treatment of Migraine available at present includes the use of analgesics and vasodilators. They have an insignificant role in achieving success but have adverse effects. The present scenario encourages exploring newer, efficacious drugs/procedures to tackle such disease entities. *Pathyadi Kwath* recommended in *Sharangdhara Samhita* for headache (migraine, cluster headache), earache, dental pain, pain in the eye, night blindness. The positive effect of *pathyai Kwath* in *Ardhavabhedaka* has proven in various studies. (15) The only difficulty in consumption of the drug is palatability and Patient compliance is one of the important aspects of research study, the palatable form of the drug will definitely reduce the dropout of patients while conducting research. So for the present study, form of the drugs is changed i.e. *Arka* (extract) is prepared to test whether it is equally effective in *Ardhavabhedaka* as *Pathyadi kwath.* Comparative Phytochemical Analysis of *Pathyadi Kwath & Pathyadi Kwath Arka* with their Standardization By HPTLC has been done on comparing the Rf values it was found that both the *kwath* and *Arka* consisted of andrographaloide. On comparing the AUC it can be said that both the formulations *kwath* and *arka* consisted of equal concentrations of andrographaloide.

In addition, the best route to eliminate *shirogata*-accumulated *doshas* is via nasal route i. e. *Nasya*. Nose *is the main* entry point to reach up to *shiropradesha.* (16) The importance of *Nasya karma* in the treatment of headache disorders cannot be ignored. Thus, oral administration of *Pathyadi kwath Arka* along with *Kataphala churna pradhamana Nasya* was the treatment of choice.

Aims and objectives

To evaluate the clinical efficacy of *Pathyadi Kwath Arka & Katphala Churna Nasya* in the management of *Ardhavabhedaka* with special reference to Migraine.

Null Hypothesis H0

Pathyadi Kwath Arka &Katphala Churna Nasya is effective in the management of *Ardhavabhedaka.*

Alternative Hypothesis H1

Pathyadi Kwath Arka & Katphala Churna Nasya is not effective in the management of *Ardhavabhedaka.*

Materials and Methods

Plant Material: Raw drugs purchased from Malhar Ayurved drugs wholesale distributor, Nerul. Authentification of raw drugs carried out by Botanist (ref no. 08192131)

Pathyadi Kwath Ark: 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	*Haritaki*	*Terminalia chebula* (Retz).	Fruit	1 part
2	*Bhibhitaki*	*Terminalia bellirica* (Gaertn) Roxb	Fruit	1 part
3	*Amalaki*	*Phyllanthus emblica* (L)	Fruit	1 part
4	*Nimb*	*Azadiracta indica* (A. Juss)	Stem bark	1 part
5	*Bhunimba*	*Andrographis paniculata* (Burm)	Whole plant	1 part
6	*Haridra*	*Curcuma longa*(Linn)	Rhizome	1 part
7	*Guduchi*	*Tinospora cordifolia* (Lour) Merr	Stem	1 part

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

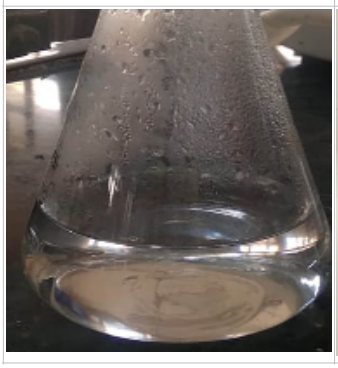
Pathydi Kwath Arka (extract) was prepared by using a standard method described in *Arkaprakash* (17) in *Rasashastra* and *Bhaishajya kalpana* department, D. Y. Patil School of Ayurveda, Nerul Navi Mumbai. *Arkaprakash* is the first *Ayurvedic* classical text in which various kinds of distillation procedure and

heating methods has mentioned for preparing *arka*. Total 210 gm of drug (coarse) taken, each 30 gm 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. Aka obtained collected in transparent borosil jar (Fig 1).

Table: - 2 Total quantity of ingredients and yield obtained in the preparation of drug

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

Katphal Churna - Raw drug of *Katphala* purchased from Malhar Ayurved drugs wholesale distributor, Nerul. Course powder of *Kataphala* was prepared in grinder, then filtered from mesh size 500 micron (BS 30, ASTM 35) and smooth powder of *Kataphala* obtained Authentication of raw drug was carried out by Botanist (ref no. 0812219)(Fig 2).

Figure 1	Figure 2
	

|Table: - 3 Dose and Duration

	Pathyadi Kwath Arka.	*Kataphala Churna Pradhamana Nasya*
Dose	10 drops with 10 ml of warm water Morning and evening	*Muchunti pramana* (amount of drug obtained between index finger & thumb, after sharply squeezing, gripping, pinching)
Duration	12 wk	12 wk

Inclusion and Exclusion Criteria

Inclusion Criteria

- Age: 18 to 45 years.
- Patients presenting with signs and symptoms of Migraine described as per *Ayurvedic* and modern science.

Exclusion Criteria

- Pregnant and lactating women.
- Ophthalmologic migraine and Complicated migraine
- Patients using drugs for any other systemic illness.
- Patients suffering from major disease e.g. tuberculosis, cancer, diabetes mellitus, heart disease, hypertension etc.
- Secondary Headache caused by sinusitis, meningitis, brain tumor, encephalitis, cervical spondylitis, refractive error and increased intra ocular pressure

The diagnosis based on the criteria of Migraine provided by International Headache Society. (18)

- At least 5 attack in the history fulfilling criteria B-D
- Headache attacks lasting 4-72hours.(untreated or unsuccessfully treated)
- Headache has at least 2 of the following characters
  - Unilateral location
  - Pulsating quality.
  - Moderate or severe pain intensity.
  - Aggravation by or causing avoidance of routine physical activity(e.g. walking or climbing stairs)
- During headache at least one of the following
  - Nausea and/or vomiting
  - Photophobia and phonophobia
- Not better accounted for by another ICHD-3 diagnosis.

Criteria for Assessment

Pilot study conducted on 10 patients selected randomly irrespective of, sex, religion, education etc. Follow up has been carried out on 0, 2 wk., 4wk, 6wk, 8wk, and 10wk 12wkThe assessment will be done before, during and after the treatment and results will be analyzed statistically as per the assessment chart.

Pain Assessment Scale (19, 20)

Donna Wong and Connie Baker developed this pain scale having six faces. It shows the series of faces range from happy face at '0' or no hurt to a crying face at '10' or worst pain. Originally, this scale was developed for children and illiterate patients because they may not able to tell exact degree of pain so these cartoon faces can help to assess their severity. In the current study, scale was used to assess severity of headache (pain) in migraine patients in which patient have to choose face denoting his/her present situation.

Grading of severity of pain is done from 0 to 5 in which grade 0 represent first happy face i.e. 0 in pain scale. Grade 1 represent second face i.e. (1-2) in pain scale. Third face is represented by grade 2 i.e. (3-5) in pain scale. Grade 3 represented by forth face i.e. 6 in pain scale. Grade 4 represented by fifth face i.e. (7-9) in pain scale, and sixth face is represented by grade 5 i.e. 10 in pain scale.

Figure - 3

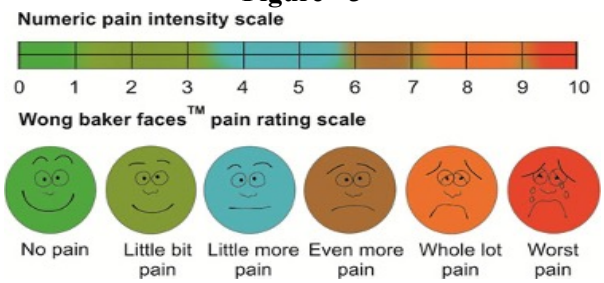


Table: - 4 Grading for assessment of the symptoms

The severity of Pain	
0	No pain (0)
1	Intermittent mild pain i.e. bearable (1-2)
2	Continuous mild pain not disturbing routine work (3-5)
3	Continuous moderate pain(bearable) not disturbing the routine work (6)
4	Continuous severe pain disturbing the routine work(7-9)
5	Severe (non-bearable) pain (10)
Nausea	
0	Nil
1	Occasionally
2	Moderate, can ignore at times
3	Severe, disturbing routine work
4	Severe enough, a small amount of fluid regurgitating from mouth
Duration of the pain	
0	No pain
1	minute - 3 h
2	4-12 h
3	13-24 h
4	Over 24 h or continuous
Vomiting	
0	Nil
1	Only if the pain does not subside
2	Vomiting 1-2 times
3	Vomiting 2-3 times
4	Forced to take medicine to stop vomiting
Frequency of attack	
0	No attack
1	Once in 21-30 days
2	Once in 11-20 days
3	Once in 1-10 days
4	Continuous/daily
Vertigo	
0	Nil
1	Feeling of giddiness
2	Patients feels as if everything is revolving
3	Revolving sign and blackout
4	Unconscious
Photophobia	
0	Nil
1	Intolerance of bright sunlight
2	Mild pain occurring upon exposure of light
3	Moderate pain occurring upon exposure of light
4	Severe pain occurring upon exposure of light
Associated symptoms	
0	No symptoms
1	Mild can do his/her work
2	Moderate forced to stop work
3	Severe forced to take rest
4	Excruciating forced to take medicine

Associated Symptoms are - Tinnitus, Phonophobia, Aura, Numbness, Heaviness in head, Tenderness, Diarrhea, and Confusion

Observations

Pilot study conducted on 10 patients to evaluate clinical efficacy of *Pathyadi Kwath Arka* and *Kataphala churna pradhamana nasya* in management of *Ardhavabhedaka*. All the study parameters observed as per representation gradation done before and after treatment given.

Fig: - 4 Graphical representation given as below

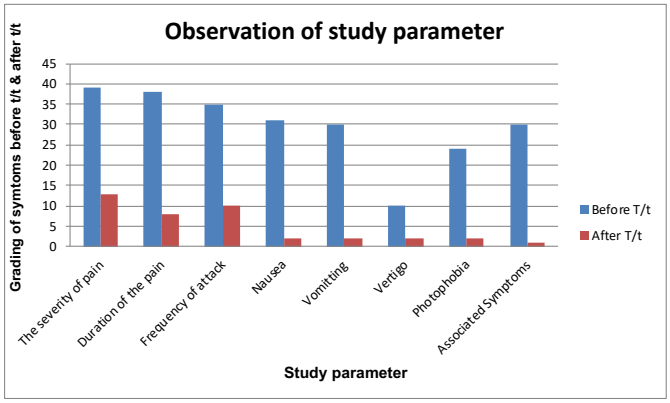


Table: 5 Tabular observation given as below

Parameters	Before T/t	After T/t	Percent Relief	Result
The severity of pain	39	13	67	Good Relief
Duration of the pain	38	8	79	Good Relief
Frequency of attack	35	10	71	Good Relief
Nausea	31	2	94	Excellent Relief
Vomiting	30	2	93	Excellent Relief
Vertigo	10	2	80	Good Relief
Photophobia	24	2	92	Excellent Relief
Associated Symptoms	30	1	97	Excellent Relief

The above table shows the total relief in the parameter. The severity of pain, Duration of the pain, Frequency of attack is 67%, 79%, & 71% respectively indicating good relief. Commonly seen symptoms in migraine Nausea and Vomiting shows excellent relief i.e. 94% and 93%. Vertigo which seems to be difficult to cure shows 80 % relief. Photophobia (Intolerance to bright light) got excellent relief i.e. 92%. Associated symptoms Tinnitus, Phonophobia, Aura, Numbness, Heaviness in head, Tenderness, Diarrhea, and Confusion that are seen in the patients of migraine in little or more concentration gave excellent relief i. e. 97%.

Effect of therapy on system score by Wilcoxon Signed Rank test

Table: - 6 Data generated was single grouped and ordinal and analyzed using Wilcoxon Sign Ranked Test.

Parameter	Observation	MIN	MAX	MED	SD	SE	W	P value	Result
Severity of Headache	BT	2	5	4	0.9944	0.9487	55	0.001	Significant
	AT	0	3	1	0.3145	0.3000			
Duration of Headache	BT	3	4	4	0.4216	0.6325	55	0.001	Significant
	AT	0	2	1	0.1333	0.2000			
Frequency of Headache	BT	2	4	4	0.7071	0.8165	55	0.001	Significant
	AT	0	2	1	0.2236	0.2582			
Nausea	BT	2	4	3	0.7379	0.2330	55	0.001	Significant
	AT	0	1	0	0.4216	0.1333			
Vomiting	BT	1	4	3	0.9428	0.2981	55	0.001	Significant
	AT	0	1	0	0.4216	0.1333			
Vertigo	BT	0	2	1	0.6670	0.2108	36	0.0039	Significant
	AT	0	1	0	0.3162	0.1000			
Photophobia	BT	1	4	2	0.9661	0.3055	55	0.001	Significant
	AT	0	2	0	0.6325	0.2000			
Associated Symptoms	BT	2	4	3	0.8165	0.2582	55	0.001	Significant
	AT	0	1	0	0.3182	0.1000			

From the above table (P<0.05), null hypothesis is accepted, hence it is clear that all the parameters show significant difference in the observations (before treatment and after treatment). We can conclude the drug is effective *Pathyadi Kwath Arka* & *Katphala Churna Nasya* is effective in management of *Ardhavabhedaka*

Discussion

Pathydi Kwath Arka (extract) prepared by using standard method described in *Arkaprakash*having same Properties as *Pathyadi Kwath*, the only difference is its colorless nature.*Arka* was prepared by the process of distillation in distillation apparatus.

Table: - 7 Properties of *Pathyadi Kwath Arka*

Sr. No.	Name	*Rasa*	*Guna*	*Veerya*	*Vipaka*	*Prabhav*
1	***Haritaki***	*5 rasas except lavana*	*Laghu, Ruksha.*	*Ushna*	*Madhura*	*Tridoshahara*
2	***Vibhitaki***	*Kashaya*	*Laghu, Ruksha*	*Ushna*	*Madhura*	*Kaphapittahar*
3	***Amalaki***	*5rasas except Lavana, Amla rasa pradhana*	*Laghu Ruksha Sheeta*	*Sheeta*	*Madhura*	*Tridoshahara*
4	***Nimba***	*Tikta Kashaya*	*Laghu, Ruksha.*	*Sheeta*	*Katu*	*Kaphapittahar*
5	***Bhunimba***	*Tikta*	*Laghu, Ruksha.*	*Sheeta*	*Katu*	*Kaphapittahar*
6	***Haridra***	*Tikta Katu*	*Laghu, Ruksha,*	*Ushna*	*Katu*	*Kaphavatahara*
7	***Guduchi***	*Tikta, kashaya.*	*Laghu,Snigdha.*	*Ushna*	*Madhur*	*Tridoshahara*

Percentage was drawn by considering total as 100% i.e. fortotal of any *rasa* or *guna* present in the all seven drug. For e.g. number of *tikta* rasa in seven drugs was six so its percentage drawn as 86%.

Table: - 8 *Rasa, guna, veerya, veepaka, doshaghnata* of this indigenous compound described as follows

Sr. no.	Properties	Number	Percentage
1. Rasa	*Madhura*	2	29%
	Amla	2	29%
	Katu	3	43%
	Tikta	6	86%
	Kashaya	5	71%
2. Guna	*Snigdha*	1	14%
	Laghu	7	100 %
	Ruksha	6	86%
	Sheeta	1	14%
3.Veerya	*Sheeta*	3	43 %
	Ushna	4	57 %
4.Vipaka	*Madhuar*	4	57 %
	Amla	0	0 %
	Katu	3	43 %
5.Doshaghnata	*Tridoshhara*	3	43 %
	Kaphapittahara	3	43 %
	Kaphavatahara	1	14%

1. *Rasa* - In Combination, the drug contains all five except *lavanarasa*. It contains *Tikta rasa i*n maximum percentage i.e.86%, *kashayarasa* 71%, *katu rasa* 43%, *Madhur* & *amla rasa* each 29%,
2. *Guna*- The different *Gunas* described in the *Ayurvedic* literature about indigenous drugs. Out of these *Pathyadi kwath* possesses 100 % *laghu guna* while *Ruksha guna* is 86%, and *Snigdha* & sheet *guna* is 20% each.
3. *Vipaka* - This drug possesses *Madhur Vipaka* in maximum percentage i.e. 57% &*katu vipaka* 43%.
4. *Veerya* –Percentage of the drug for *ushna veerya* is 57 % and sheet *veerya* is 43%
5. *Doshaghnata* - *Tridoshhara* and *kaphapittahara* in 43% each.

It is clear from the above table that *Pathyadi Kwath Arka* is *tikta kashaya rasa pradhana,* having *madhur vipaka* and *ushna veerya* with *laghu* & *ruksha guna* predominance. As per *Acharya Sushruta Ardhavabhedaka* is said *Tridoshapradhan* and *charak* said it as *Vatakaphapradhana doshadushti.*However,

practically most of the patients with migraine are seen having hyperacidity, history of consumption of street food, spicy food, night out, stressful lifestyle these are described as *pittaprakopaka hetues* in *Ayurveda*, which are responsible for nausea, vomiting, vertigo. So considering pitta predominance in *Ardhavabhedaka tikta kashaya* and *madhur vipaka* of *Pathyadi kwath* will be best *pittashamaka dravya. Katu* and *tikta rasa* of *pathyadi kwath* have *deepana, pachana karma*that helps to improve metabolism by the property of *Amapachana*. *usna veerya* of *pathyadi kawth* act as *strotoshodhaka* and *kledashoshaka;* eliminate morbid *doshas* accumulated in the body.

Though the percentage of *ushna veerya dravya* are 57% it is not that high to cause *pittaprakopa* rather it balances associated *kaphadosh* in *Ardhavabhedaka.* In addition, *laghu* and *ruksha guna* act as *kleda shoshaka, mala* of *kapha dosh.* All we can say *pathaydi kwath* is the formulation that can break the *samprapti of Ardhavabhedaka.*

Phytochemical Analysis Between Pathyadi Kwath & Pathyadi Kwath Arka and Its Standardization By HPTLC was carried out to evaluate the presence of active ingredient Andrographaloide in both the sample. On comparing the Rf values it was found that both the *kwath* and *arka* consisted of andrographaloide. On comparing the AUC it can be said that both the formulations *kwath* and *arka* consisted of equal concentrations of andrographaloide.

Table: - 9 Properties of Kataphala churna

Sr. No.	**1**
Name	***Kataphala***
Rasa	*Kashaya, Tikta, Katu*
Guna	*Laghu, Tikshna*
Veerya	*Ushna*
Vipak	*Katu*
Prabhav	*Kapha vatahara*

Kataphal is described in *vedanasthapaka gana*(21) thus definitely helps to reduce the severity of pain in *ardhavbhedaka*. *Pradhamana nasya* is the *shodhana* type of *nasya* in which drug inhaled in the form of powder (*churna*) in the dose of *Muchuntipramana* (A pinch i.e. to firmly squeeze or grip between your thumb and finger). For the present study,*nasya* was given daily Morning and evening. The mode of action of the drug explained as below:

Acharya Vagbhata explains nose as the door for *shira* i.e. drug administered via nasal route helps to eliminate *shirastha-vitiated dosha.* The drug will reach *shringataka marma,*(22) spreads upon *nasa, shrotra, akshi, jivha, murdha* through their *siras* and helps to expel out accumulated *doshas* in *urdhwajatru pradesh.* Drug has given via *nasya* absorbed by mucosal lining of the nose and paranasal sinuses and reaches up to the olfactory area from where it spread within the higher center of the brain including pituitary, thalamus, hypothalamus, and limbic system through olfactory nerve terminals. From the olfactory nerve receptor, it can reach up to the intracranial structures. Thus, *nasya* with *katphala churna* work in *Ardhavabhedaka* with its *vatahara* and *vedanasthapaka* properties.

Conclusion

A current study shows *pathyadi kwath* and *katphala churna nasya* are effective in the management of *Ardhavabhedaka. Pathyadi kwath* is the proven formulation mentioned in *sharangdharsamhita* for *Shirashula* has the best result, used in the form of *arka* for the present study. Liquid preparation obtained by distillation of certain liquid or drugs drenched in water using *Arkayantra* or any convenient modern distillation apparatus called *Arka Kalpana.* The Concept of *Arka* as dosage form seen in different texts but the pharmaceutical aspect of *arka kalpana* is mention in detail mainly in *Ravana's Arka Prakash*. *Shirashulahara yoga (Arka)* (23) mentioned in *Arkaprakash has* the same ingredients as in *pathyadi kwath*. *Arka Kalpana* can be the better substitute because of having more potency in comparison to the other *kalpanas*. It is the most potent due to *dosharahithatva* and its specific *gunas*. It is having increased potency, reduced dose, more shelf life and also easy absorption, fast action, and patient compliance. Once *arka* is prepared, it can be stored for at least six months, convenient to carry, required in minimum dose, and palatable as well. Such a palatable form of the drug will definitely reduce dropout of patients while conducting a research study.

Limitation of the study

Though the shelf life of *arka* mentioned as six months, in the humid atmosphere in Mumbai it was difficult to store for more than four-months. More and more experiments on the preparation and preservation of *arka* should be done to prove its shelf life.

Clinical Significance

Consumption of drugs in the form of *Arka* will simplify research study by reducing difficulty related to the trial drug.

Reference

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