

CONCEPT OF *PAKA-KALA* IN *SNEHA KALPANA* WITH REFERENCE TO
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ABSTRACT

Sneha kalpana is one of the chief *kalpana* of Ayurvedic therapeutics. As per classical method it should not be prepared in one day "*Sadhyetanaekavasare*", by doing it in more than one day its properties are augmented. *Ashwagandhadya ghrita* of *Cakradutt* was taken up for studying the above aspect. As it contains *godugdha* hence, it should be prepared in three days and as its *kwatha* from roots in twelve days. Three batches of each sample of *Ashwagandhadya ghrita* i.e. in 1, 3 and 12 days duration were prepared and were analysed as per pharmacopoeial standards. It was observed that three days of *Ashwagandhadya ghrita* was ideal than one and twelve days due to loss of necessary useful substances (here omega-3 fatty acids like EPA-eicosapentenoic acid & DHA-docosahexanoic acid), less amount of useful active constituents (here Withanoside IV and Withanone) and more production of harmful substances (here trans fatty acids).

KEYWORDS: *Sneha kalpana*, *Ashwagandhadya ghrita*, *paka kala* concept, *Sadhyetnaekvasare*.

INTRODUCTION

Sneha kalpana is an important *kalpana* of Ayurved, being used externally as well as internally for *paan*, *abhyanga*, *nasya* etc. Amongst the four main types of *sneha* –*vasa majja*, *ghrita* and *taila* –the latter two are chiefly used.

For preparing *sneha kalpana* three things are used-*kalka dravya*, *sneha dravya* and *drava dravya*. For *ghrita* or *taila kalpana* the general method is that the *kalka* should be taken one part, *sneha* should be taken four parts and *drava dravya* should be taken sixteen parts. All this is heated together till *paka pariksha* is observed and then it is filtered to obtain the *siddha ghrita* or *taila*.

However, regarding the duration in preparation of *sneha kalpana* it is clearly mentioned in the texts that the *paka* of *ghrita*, *taila* etc. should not be done in a day "----*Sadhyetanaekavasare*".^[1] and by preparing in more than one day the properties are augmented. Moreover according to another reference the *paka* with *mamsa rasa* or *vrihi* should be done within a day, that with *godugdha* should be done in three days, that with *svarasa* should be done in four, that with buttermilk, *arnala* etc. should be done in six days and that with roots or climbers should be done in 12 days.^[2]

So to study the concept of *paka kala* particularly "----*Sadhyetanaekavasare*", *Ashwagandhadya ghrita* from *Cakradutt*³ was selected for the study, as it being a single drug formulation, it would be more appropriate for the analytical study. Further it would also be studied to see whether *Ashwagandhadya ghrita* should be prepared in 3 days or 12 days because as it contains milk it is said to be prepared in 3 days and as it contains roots it is said to be prepared in 12 days according to above reference.

MATERIALS AND METHOD

Reference- *Chakradutt -Vatavyadhi*^[3]

<i>Ashwagandha mula kalka</i> (fresh root)	125 g
<i>Ashwagandha mula kvatha</i> (dry root)	2 l
<i>Goghrita</i>	500g
<i>Godugdha</i>	2 l

Samples-

1. Preparation of *Ashwagandhadya ghrita* - in one day (Sample-A)
2. Preparation of *Ashwagandhadya ghrita* - in three days(Sample-B)
3. Preparation of *Ashwagandhadya ghrita* - in twelve days(Sample-C)

The *Kwatha* was prepared by adding 8 times of water and reducing to 1/4th. The one day *ghrita* was prepared by heating till *paka pariksha* is observed on the same

day. The 3 day sample was prepared by heating for approx. two hours on day 1 and 2 and on 3rd day it was heated for approx. 4 hrs. by which time *paka siddhi lakshana* were observed. The 12 day sample was prepared by heating for approx. 1 hour daily and *paka* was completed on the 12th day.

Three batches of each sample of *Ashvagandhadya ghrita* i.e. in 1, 3 and 12 days duration were prepared.

Analytical study

For analytical study the organoleptic parameters, physico-chemical parameters, High Performance Liquid

Chromatography (HPLC) Analysis and GC-MS (Gas chromatography-mass spectrometry) of the samples was carried out.

OBSERVATION AND DISCUSSION

The observations of analytical study by organoleptic parameters, physico-chemical parameters, HPLC and GC-MS is given in a tabular form as follows.

Table 1: Organoleptic characteristics of *Ashvagandhadya Ghrita*.

	Sample A	Sample B	Sample C
Rupa(colour)	Golden yellow	Golden yellow	Golden yellow
Gandha (smell)	Specific odour of <i>Ghrita</i>	Specific odour of <i>Ghrita</i>	Specific odour of <i>Ghrita</i>
Rasa (taste)	Typical taste of <i>Ghrita</i> like, <i>kashaya, tikta, anurasa-madhura</i>	Typical taste of <i>Ghrita</i> like <i>kashaya, tikta, anurasa-madhura</i>	Typical taste of <i>Ghrita</i> like, <i>kashaya, tikta, anurasa-madhura</i>
Sparsha (touch)	Comparatively less Viscous than <i>ghrita</i>	Comparatively less Viscous than <i>ghrita</i>	Comparatively less Viscous than <i>ghrita</i>

Table 2: Physico-chemical values of *Ashvagandhadya Ghrita*.

Parameters	Sample A	Sample B	Sample C
Refractive Index	1.471	1.471	1.471
Saponification Value	201.12	193.97	216.24
Acid value	3.426	3.330	3.344
Iodine value	41.90	42.69	40.97

HPLC

Table 3: Area % of Withanoside IV and Withanone in *Ashvagandhadya Ghrita*

Area% of	Sample A	Sample B	Sample C
Withanoside IV	0.908	1.128	1.304
Withanone	13.348	13.787	11.283

GC-MS

Table 4: Area % of essential fatty acids and trans fatty acid in various samples of *Ashvagandhadya Ghrita* and plain *Goghrita* (sample G).

Area% of	Sample A	Sample B	Sample C	Sample G
Linolenic acid	0.48	0.42	0.42	0.33
EPA	0	0.09	0.07	0.08
DHA	0	0.08	0.08	0.05
Trans fatty acid	3.38	2.94	3.09	2.98

EPA –eicosapantonic acid, DHA-docosahexanoic acid

The organoleptic i.e. colour, taste (*rasa*), consistency and odour of the samples of *Ashvagandhadya ghrita* prepared in one day, three days and twelve days were similar.

Iodine value indicates degree of unsaturation of the *ghrita* which is beneficial for health. A high iodine value indicates that the fats are a rich source of polyunsaturated fatty acids that possess health benefits such as regulating blood cholesterol levels.^[4]

Iodine value of sample B (3 days) is highest. Moreover the high iodine value and low saponification value in sample B(3 days) compared to A(1 day) and C(12 days) shows that unsaturation has taken place and long chained unsaturated fatty acids have been formed in B(3 days). While higher saponification value in A (1 day) and C (12 days) shows that here the unsaturation has not occurred appropriately. Hence this *ghrita* should be prepared in three days and not in one or twelve days.

HPLC analysis shows the presence of Withanoside IV and Withanone in all the samples of *Ashvagandhadya*

ghrita. Both of these constituents are associated with neuroprotective property and are useful in learning and memory and in ameliorating dementia.¹⁵ The highest amount together of these two ingredients is found in sample B followed by A and C.

The three types of omega-3 fatty acids involved in human physiology are α -linolenic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA). They are essential fatty acids which are necessary for health but the body cannot make them i.e. they are to be obtained through food.¹⁶ These omega-3 fatty acids are considered to reduce inflammation and may help lower risk of chronic diseases such as heart disease, cancer, and arthritis. Also they are highly concentrated in the brain and appear to be important for cognitive (brain memory and performance) and behavioural function.^{17,18} Sample B shows a better proportion of these omega-three fatty acids compared to the other samples. This is followed by sample C. Sample A shows complete absence of EPA and DHA.

From this it can be inferred that *paka* should not be done in one day and when milk is an ingredient the *paka* should be done in three days.

Trans fat, or trans-unsaturated fatty acids, trans fatty acids, are a type of unsaturated fat that occur in small amounts in nature, but became widely produced industrially from vegetable fats for use in margarine, snack food, packaged baked goods and frying fast food. Although trans fats are edible, consumption of trans fats has been shown to increase the risk of coronary artery disease in part by raising levels of the lipoprotein LDL (low density lipoprotein, often referred to as "bad cholesterol"), lowering levels of the lipoprotein HDL (high density lipoprotein, often referred to as "good cholesterol"), increasing triglycerides in the bloodstream and promoting systemic inflammation.¹⁹ Thus trans fatty acids are harmful for the body. Sample B shows the least amount of trans fatty acids followed by sample A and C. This also indicates that this *ghrita* should not be prepared in 1 day or 12 days.

Thus, from all the above it can be observed that *Ashwagandhadhya ghrita* should be prepared in three days. It should not be prepared in one day due to loss of necessary useful substances (here omega-3 fatty acids like EPA & DHA), less amount of useful active constituents (here Withanoside IV and Withanone) and more production of harmful substances (here trans fatty acids).

CONCLUSION

Thus, in light of above, the concept of “*sadhyetnaekvasare*” is very scientific and correct and appropriate unsaturation of the fatty acids along with greater amount of active constituents and least amount of harmful substance production is what the *Acharyas* must have meant when they said “----

Vyushitastuprakurvantivisheshengunanyatha”.^{10,11} So *sneha paka* should not be done in a day. Looking to *Ashwagandhadhya ghrita*, it should be prepared in three days.

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