The role of samskara bhavana in the potentiation of the drug in terms of their chemical constituents

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Abstract

It is clear that each and every procedure is capable to produce some type of impact on drug by altering qualities of raw drug. Qualities altered to inherit by Samskaras, ultimately will give rise to various formulations and thus can produce different effects.

Acharya Charaka says, to change the quality is known as Samskara i.e. qualitative alteration done for improvement, enhancement, modifications, decrease the bad effects etc. Bhavana is one type of Samskara.

The potency of the single or compound drugs could be further potentiated by conducting the Bhavana process, using liquid media of the same drug or the drugs similar in potency. The main reason behind this is even a less quantity of a drug will exerts multiple action if it has undergone proper Bhavana.

In Amalaki Rasayana, Churna of Amalaki is Bhavita by its own Swarasa for 21 times. So, active chemical constituents may increase. In this study, O.A.C., F.D.A.C., O.A.R., F.D.A.R. and O.A.R. (S) - water soluble extractive (42.64, 66.54, 66.19, 77.45 and 68.92%w/w respectively), methanol soluble extractive (33.51, 62.62, 54.16, 70.34 and 79.86% w/w respectively) and total phenolic content (14.4, 16.00, 24.40, 25.40 and 25.00%w/w respectively) were found.

Key words : Bhavana, Samskara, Ordinary Amalaki Churna (O.A.C.), Freeze Dried Amalaki Churna (F.D.A.C.), Ordinary Amalaki Rasayana (O.A.R.), Freeze Dried Amalaki Rasayana (F.D.A.R.)

Introduction

The Rasashastra and Bhaishajya Kalpana are related to Ayurvedic Pharmacy where Rasashastra deals with the herbo-mineral preparation while Bhaishajya Kalpana mainly deals with different pharmaceuticals of plant origin of drugs. The most visible concepts of Bhaishajya Kalpana are due to its practical aspect, which not only deals the drug manufacturing but it also includes, the dispensing to the patient in most suitable form. Through these the drugs are made into an easy palatable form, enhancing the therapeutic properties and nectarising form.

Thus a medicinal preparation given to a patient acts only when the ingredients are pharmacologically genuine for the context. The different pharmaceutical processing of a drug is of great importance in drug preparations. It is accepted fact that the success in the treatment solely depends on the quality and genuinity of the drug.

In this modern era of globalization of pharmaceutical industry and stringent regulatory requirements it becomes necessary to evaluate the Ayurvedic formulations on the basis of their labeled indications and also to check the manufacturing standards with the help of their chemical constituent standards.

In present study single drug i.e. Amalaki in Churna form and it was potentiated by Bhavana of Amalaki Swarasa by 21 times in different batches. Nowadays, freeze dried materials of plant origin drugs are very common in practice. Therefore, one sample of Amalaki Rasayana was prepared by using freeze dried material in same condition and afterthat samples of Amalaki

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Rasayana were analyzed for various suitable organoleptic, physical and chemical parameters.

The ordinary Amalaki Churna was obtained from pharmacy of Gujarat Ayurved University, Jamnagar. Freeze dried Amalaki Churna was obtained from Gujarat Aqua Industries, Ahmedabad.

Aims and Objectives

1. To prepare the Amalaki Rasayana by Bhavana as per the reference of the Charaka Samhita with certain modifications.

2. To prepare the Amalaki Rasayana by freeze dried Amalaki Churna by Bhavana.

3. To prepare Amalaki Rasayana by soaking method.

Materials and Methods

1 Adhaka Amalaki Churna dipped in its own Swarasa for 21 days then 2 Adhaka Madhu and Ghrita should be added. The Pippali Churna (1/8th part of Amalaki Churna) and Sharkara Churna (1/4th part of Amalaki Churna) should be mixed well and be kept in Ghrita Lipta earthen pot into Bhasma Rasi for 1 year. It is used as Amalaki Rasayana1.

Nowadays, single herbal drug therapy is used in Ayurvedic practices. As per the Rasatantrasara, Amalaki Churna is triturated for 21 times with its own Swarasa.

Practical 1: Preparation of Amalaki Rasayana by Bhavana (Ordinary and Freeze dried)

Apparatus: Stone mortar (42x24x14cm), pestle, mixer machine, measuring glass, spatula, enamel tray, weighing balance etc.

Procedure: Accurately weighed Amalaki Churna was taken in the stone mortar, added sufficient quantity of fresh Amalaki Swarasa and trituration process was carried out till the pestle was not running smoothly in the mortar, again extra Amalaki Swarasa was added and triturated till the desired condition was obtained. This process was repeated for 21 times and each time fresh Amalaki Swarasa was added. After completion of the Bhavana process, the whole material was taken in the enamel tray and dried in the oven (400–420C). When material was completely dried, it was converted into powder form by mixer machine.

Practical 2: Preparation of ordinary Amalaki Rasayana (Soaking method)

Apparatus: Plastic tray, mixer machine, measuring glass, spatula, knife, weight balance etc.

Procedure: Accurately weight Amalaki Churna was taken in the plastic tray, to it was added sufficient quantity of fresh Amalaki Swarasa and mixed well by hand. After that paste like Amalaki Churna spread in tray and it was left for drying in shade. This process was repeated for 21 times and each time fresh Amalaki Swarasa was added. After completion of the soaking process, the materials was taken in the enamel tray and dried in the oven at temp. 400–420C. When material was completely dried, it was converted into powder form by mixer machine.

Analytical Study

According to plan of study the samples, designated as given below,

O.A.C. = Ordinary Amalaki Churna

O.A.C.7 = Ordinary Amalaki Churna (7 Bhavana with Amalaki Swarasa)

O.A.C.14 = Ordinary Amalaki Churna (14 Bhavana with Amalaki Swarasa)

O.A.R.21 = Ordinary Amalaki Rasayana (21 Bhavana with Amalaki Swarasa)

F.D.A.C. = Freeze Drying Amalaki Churna

F.D.A.C.7 = Freeze Drying Amalaki Churna (7 Bhavana with Amalaki Swarasa)

F.D.A.C.14 = Freeze Drying Amalaki Churna (14 Bhavana with Amalaki Swarasa)

F.D.A.R.21 = Freeze Drying Amalaki Rasayana (21 Bhavana with Amalaki Swarasa)

O.A.R.(S) = Ordinary Amalaki Rasayana (by Soaking Method)

were subjected for the analysis for various suitable organoleptic characters, physico-chemical parameters i.e. loss on drying (LOD)2, ash value (AV)3, pH4, water soluble extractive value (WSE)5, methanol soluble extractive value (MSE)6 and total phenolic content7.

Results and Observations

Practical 1: Amalaki Churna became wet by trituration of 30 minutes after adding of Amalaki

Swarasa. When Amalaki Churna was completely soaked in Amalaki Swarasa, it became wet, paste like and brown colour was changed into dark brown. When the materials was left for one hour, after trituration process, the upper surface of the material changes its colour from brown to blackish brown , but when again triturated became brown. After each Bhavana the volume of materials was found to increase and colour changed to dark brown. During trituration process sour smell was observed.

Practical 2: When Amalaki Churna was completely soaked in Amalaki Swarasa, it became wet, paste like and light brown colour was changed to brown. Initially 100 ml Swarasa was required for complete soaking of Amalaki Churna but quantity of Amalaki Swarasa gradually more required in later process in comparison to previous process. After each soaking process the volume of materials was found increased and colour changed into dark brown.

Table 1. showing oragnoleptic characters of Amalaki Churna

Sr.	Parameters	O.A.C.	F.D.A.C.
1	Colour	Brown	Yellowish green
2	Taste	Sour, mild astringent	Astringent, mild sour
3	Odour	Characteristic very faint	Characteristic very faint
4	Touch	Rough texture	Rough

Table 2. showing oragnoleptic characters of Amalaki Rasayana

Sr.	Parameters	O.A.R.	F.D.A.R.	O.A.R.(S)
1	Colour	Dark brown	Brown	Brown
2	Taste	?sour astringent	Sour, astringent	?sour astringent
3	Odour	Very faint	Very faint	Very faint
4	Touch	↓Roughness	↓Roughness	Rough texture

Table 3. showing comparison of different samples of Amalaki Rasayana

Parameters	O.A.R.			F.D.A.R.			O.A.R. (by soaking method)		
	I	II	III	I	II	III	I	II	III
Trituration time (h)	3	3	3	3	3	3	-	-	-
Completion time (days)	32	34	32	37	39	40	27	27	27
Required fresh Amalaki fruit (g)	4200	4200	4200	6300	6300	6300	4000	4000	4000
Required fresh Amalaki Swarasa (ml)	2625	2730	2520	3675	3780	3780	2500	2500	2500
Initial weight (g)	200	200	200	300	300	300	100	100	100
Final weight (g)	449	463	440	696	676	700	290	292	294
Wt. gain (g)	249	263	240	396	376	400	190	192	194
Wt. gain (%)	124.5	131.5	120	132	125	133.33	190	192	194

Table 4. Showing comparative data of physico-chemical parameters of different Amalaki (Churna and Rasayana) samples

Sr.	Samples	LOD (%w/w)	AV (%w/w)	pH	WSE (%w/w)	MSE (%w/w)
1	O.A.C.	04.74	02.45	03.25	42.64	33.51
2	F.D.A.C.	06.62	01.62	03.02	66.54	62.62
3	O.A.R.21	07.96	03.53	03.16	66.19	54.16
4	F.D.A.R.21	06.13	02.31	03.14	77.45	70.34
5	O.A.R. (S)	07.40	02.79	03.15	68.92	79.86

Table 5. showing analytical data of Amalaki Churna after 7th and 14th Bhavana

Sr.	Samples	Parameters		
		pH	WSE %w/w	MSE%w/w
1	O.A.C. 7	03.25	55.00	41.84
2	O.A.C. 14	03.19	58.16	43.42
3	F.D.A.C.7	03.10	69.99	65.59
4	F.D.A.C.14	3.13	74.74	67.92

Table 6. showing the absorbance of different concentrations of standard gallic acid solution

Concentration of Standard gallic acid (mg)	Absorbance at 765 nm
0.02	0.084
0.05	0.228
0.07	0.330
0.10	0.464
0.12	0.630
0.15	0.707
0.17	0.837
0.20	0.901

Figure a. Standard curve of gallic acid

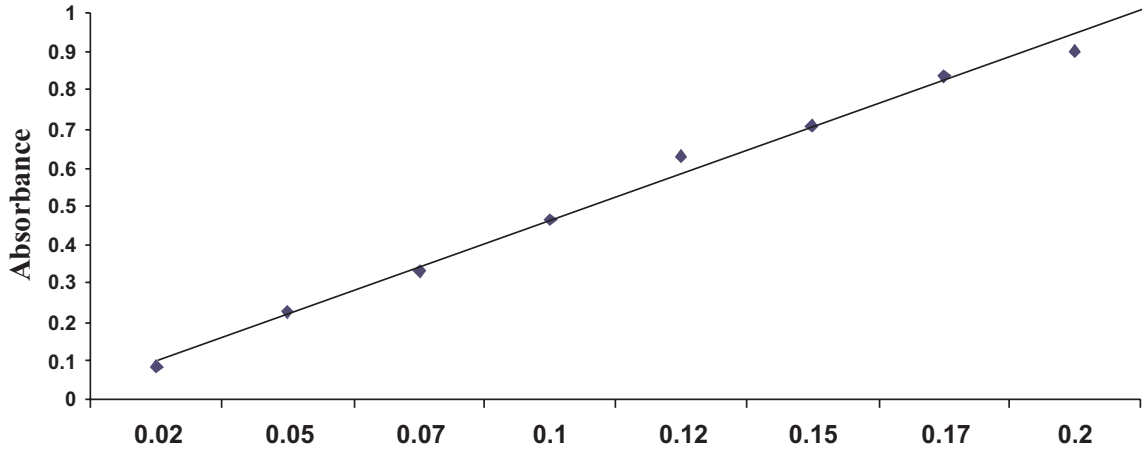
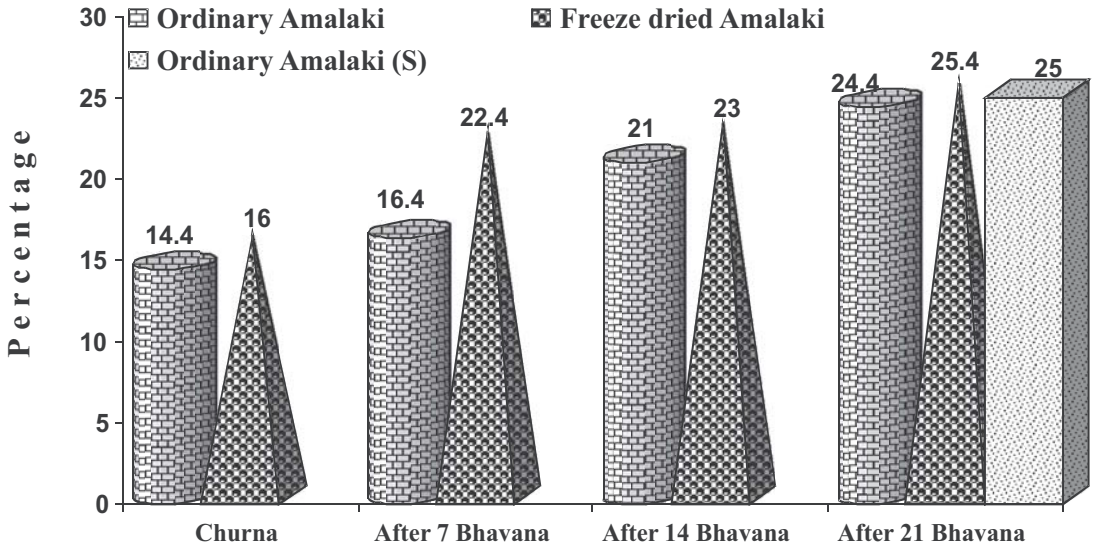


Table 7. showing percentage of total phenolic content in different samples was calculated from the standard curve

Sr.	Sample	%w/w
1	O.A.C.	14.4
2	O.A.C.7	16.4
3	O.A.C.14	21.0
4	O.A.R. 21	24.4
5	F.D.A.C.	16.0
6	F.D.A.C.7	22.4
7	F.D.A.C.14	23.0
8	F.D.A.R.21	25.4
9	O.A.R. (S)	25.0

Figure b. Percentage of total phenolic content in different samples of Amalaki Churna and Amalaki Rasayana



Discussion

The different pharmaceutical processes are followed in the preparation of the drugs. Besides helping isolation of the therapeutically active part of the drugs, these processes help to make the drugs therapeutically effective in small doses, palatable, easy in administration, easy to digest and assimiable along with long shelf life by preserving active principle these are called as Aushadha Kalpanas (medicinal formulations) in the field of Ayurveda. The drugs are prepared for the convenience of administration through different routes in different forms for the treatment of different disease conditions and patients i.e. Swarasa, Kalka, Kwatha, Asava, Sneha, Avaleha, Mashi, Lepa etc [8].

The potency of drug is to be increased or decrease as per the need by adopting various Samskara1 which may done with the help of Agni, Toya, Agnitoya Sannikarsha etc. among them Bhavana is most important process to enhance the therapeutic efficacy of a drug. Bhavita Dravya became wet and paste like is a sign of required sufficient liquid media for Bhavana9,10. On this basis Amalaki Churna was Bhavita with fresh Amalaki Swarasa by twenty one times.

To obtain the standard quantity of Amalaki Swarasa, it was prepared in the month of October, November, January and February. The average weight of one Amalaki 47.62 g and average pulp 44.50 g in the preparation of Swarasa. The pulp of fresh Amalaki fruits was churned up to homogenous pulp in the mixer at 18000 rpm 61% - 65% Swarasa was obtained on average. This was influenced by seasonal variation as the fruits were richer in Swarasa in the month of January

compared with other months.

The ideal drug in the desired form having maximum therapeutic efficacy is the need of time. Similarly the laborious methods of preparing drugs are to be analyzed properly. The changes or improvements in efficacy according to the cost of medicine and the availability of ingredients are to be very important in today's context. These were the agenda behind the comparison of the pharmaceutical procedures in which twenty one Bhavana with own Swarasa were given to Amalaki Churna in all three samples.

In first sample, the dried powder of Amalaki was triturated with Swarasa prepared from equal quantity, by weight of fresh Amalaki fruits for twenty one times. In second sample the freeze dried powder of Amalaki was triturated with Swarasa in the same pattern as described above and in the third sample dried Amalaki powder was made into a paste like form with the help of Swarasa. Here, sufficient quantity of Swarasa was taken for each process.

Increase in weight was found in all the samples but, it was maximum in third sample i.e. ordinary Amalaki Rasayana prepared by soaking method because the quantity of Amalaki Swarasa was required more in comparison to other samples and the expenditure in terms of man power and duration was less in this sample too. Moreover, the loss during the process was found minimal as compared to other samples.

The completion time was influenced by seasonal variations in ordinary Amalaki Rasayana and freeze dried Amalaki Rasayana samples.

There was not much variation, except in colour, in the organoleptic characters of ordinary Amalaki Churna and freeze dried Amalaki Churna and also of Amalaki Rasayana samples prepared by using those.

As per table 4, there was considerable difference in the values of some of the physico-chemical parameters of ordinary and freeze dried Amalaki Churna and also of the Amalaki Rasayana prepared from them. Both water and methanol soluble extractive increased in freeze dried Amalaki Churna and Amalaki Rasayana prepared by using it. Whereas both extractive values was more in O.A.R. prepared by soaking method in comparison to prepared by Bhavana process. There was not much variation in pH, which ranged between 3.02 to 3.25. Loss on drying in freeze dried Amalaki Churna (6.62%) was more than that of ordinary Amalaki Churna (4.74%) indicating presence of more moisture in freeze dried Amalaki Churna, whereas ordinary Amalaki Rasayana showed higher loss on drying (7.96%) as compared to that of freeze dried Amalaki Rasayana (6.13%) and ordinary Amalaki Rasayana (by soaking method).

As per table 7, the total phenolic content in freeze dried Amalaki Churna was more (16.0%) than that of ordinary Amalaki Churna (14.4%), suggesting that freeze drying method can be used for drying which may give better product. The data also reveals that the total phenolic content steadily increases with the increase in number of Bhavana given to the Churna from 14.4% to 16.4%, after 7 Bhavana to 21.0% after 14 Bhavana to 24.4% after 21 Bhavana in case of O.A.C. and from 16.0% to 22.4%, 23.0% and 25.4% after 7, 14 and 21 Bhavana in case of freeze dried Amalaki Churna. The total phenolic content in Amalaki Rasayana prepared by using freeze dried Amalaki Churna was 1% more than that prepared by using ordinary Amalaki Churna. In ordinary Amalaki Rasayana prepared by soaking method total phenolic content was nearer to Bhavita ordinary Amalaki Rasayana.

Conclusion

The development of Ayurvedic pharmaceutical science incorporating all the available techniques and technologies was to fulfill the demands of the society as per the changing requirements. To find out new formulations which are potent, fast acting, feasible to prepare and easy to administer taking the help of all the development of science & technology and evaluation & analysis of the same according to basic principles of Ayurveda become the inevitability of time and essential for development of our science.

In first sample for 300 g average 180 ml, in second sample for 200 g average 125 ml and in third sample for 100 g average 110 ml. The maximum weight gain in ordinary Amalaki Rasayana prepared by soaking method due to more Amalaki Swarasa was used. Preparation of Amalaki Rasayana by soaking method is more easy and conventional.

Total phenolic content, water soluble and methanol soluble extractive principles in freeze dried Amalaki Churna and freeze dried Amalaki Rasayana was more than that of ordinary Amalaki Churna and ordinary Amalaki Rasayana, suggesting that freeze drying method can be used for drying which may give better product. The values in ordinary Amalaki Rasayana prepared by soaking method was more than that of Bhavana process, suggesting that soaking method better than Bhavana process.

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