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Pharmaceutical analytical study and their nutritive evaluation of *Samsarjanopayogi Pathya Kalpas* and their modified form

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ABSTRACT

In present era demand for quick, more convenient, healthy and quality instant food preparations are increasing and there is a leading edge to pharmaceutically modify them in accordance to the patient compliance, portability, and to provide best quality and hygiene by utilizing the presently available sophisticated modern technology. Hence, the study has been specially planned to modify the *Peyadi Pathya Kalpas* into instant form and assess their physico chemical properties and to evaluate their nutritive values. Flaking technique was used for raw ingredients of *Peyadi Pathya* preparations. Fresh form of *Manda*, *Peya* and *Vilepi* were prepared using *Shashtika Shali* and white rice (*Tandula*) respectively. In same way *Yusha* was prepared using *Mudga* and *Kulattha* separately. The cooking time required for raw grains were 35±1.42, 12±0.41, 35±1.17 and 45±0.73 minutes respectively. The flaked ingredients cooking time was 6±1.35, 3±1.13, 3±1.40, 4±1.20 minutes respectively. The percentage of Carbohydrate observed in raw samples i.e. *Shashtika Shali* 75.2%, white rice 78.52% respectively and percentage of carbohydrate content in flaked samples were 77.43%, 79.49%. The protein content of raw samples of *Mudga* and *Kulattha* are 22.93% and 21.91% respectively and flaked samples were 22.93%, 20.91% respectively, so the flaking technique was used to convert the raw ingredients into flakes which were helpful to reduce the cooking time, energy consumption and less compromising with the nutritive values as concerned.

Key words: *Flaking, Peyadi, Samsarjanopayogi, Food technology.*

INTRODUCTION

Among manifold treatment modalities of Ayurveda, *Shodhana* therapy attains an esteem position and plays a key role in uprooting the chronic diseases from their root level. After the completion of *Shodhana* procedures immediately normal diet should not be advised. As *Koshtagni* is impaired, sudden adaptation of normal diet may cause further detoriation of *Koshtagni*. In order to get the complete benefits of *Shodhana* procedures *Samsarjana Karma*[1] has been explained in our classics. For which *Acharya Charaka* quotes a simile as "*Anu Agni* gets flared up by gradually putting dry grass, cow dung cakes[2] etc. like wise *Samsarjana Krama* serves to bring back the impaired *Koshtagni* to its normal level. This starts with the gradual/sequential order of simple carbohydrate to multi nutrient diet in the form of *Manda,*[3] *Peya*[4] *Vilepi, Akrita Yusha,*[5] *Krita Yusha* and *Mamsa Rasa.*[6] *Peyadi* classical preparations were more time consuming and difficult for patients to prepare by themselves, in order to reduce the preparation time which is the main factor in modification i.e. ready to

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prepare foods. The modern sophisticated Flaking[7] food technology was made use in this study.

Materials and Methods

Collection of raw drugs

Pradhana Dravyas

Shashastika Shali , White rice (*Tandula*), *Mudga*, *Kulattha* and water

Prakshepaka Dravyas

Saindhava Lavana, *Pippali Choorna, Shunthi Choorna* and *Ghritha*

Instruments used

Stainless steel vessels, weighing machine, wire mesh trays, pressure cooker, tong.

Ingredients

- *Shatika Shali* grains - 125gms
- Water- QS

Procedure

Soaking in boiled water

The measured quantity of *Shashtika Shali* was taken and washed thoroughly and soaked in boiled water for 30 minutes .

The excess water was decanted through wire mesh trays to take out the well soaked rice and keep it for drying in shade for 5-10 minutes, after the rice was partially dried it was taken for further procedure.

Steaming of soaked rice

The wire mesh trays containing soaked rice were kept in the pressure cooker and Steaming was done for 15minutes

Flaking process: Steamed *Shashtika Shali* rice

Instruments used: Flaking machine, Big plain tray, zip lock covers

Procedure

Steamed rice was taken and little by little rice was fed into the flaking machine.

Thin dry flakes were collected in the big broad tray which was kept under the flaking machine.

The flaked samples were stored in zip lock covers.

Note: White rice, *Mudga* (Green gram) and *Kulattha* (Horse gram) flakes were also prepared by adopting the same flaking procedure.

Fig. 1: Flaking machine

Fig. 2: *Shashtika Shali*

Fig. 3: *Shashtika Shali* flakes

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Fig. 4: White rice

Fig. 5: White rice flakes

Fig. 6: Green gram

Fig. 7: Green gram flakes

Fig. 8: Horse gram

Fig. 9: Horse gram flakes

RESULTS

Pharmaceutical results

1. Preparation of flaking of raw samples

Flake sample	Initial weight	Loss	Total yield
Shashtika Shali	125 g	10 g	115 g
White rice	125 g	20 g	105 g
Green gram	125 g	15 g	110 g
Horse gram	125 g	10 g	115 g

2. Cooking time of fresh form and flakes of *Peyadi Pathyas*

Samples	Cooking time of raw (Min)	Cooking time of Flakes (Min)
Shashtika	36 ±1.42	6 ±1.35

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Shali		
White rice	12 ±0.41	3 ±1.13
Green gram	35 ±1.17	3 ±1.40
Horse gram	45 ±0.73	4 ±1.20

3. Proximate Analysis raw samples

Samples	Shashtika *Shali*	White rice	Green gram	Horse gram
Moisture (%)	11.46	11.20	10.37	10.16
Protein (%)	9.54	9.74	22.93	21.91
Fat (%)	2.74	0.32	1.23	1.05
Ash (%)	1.06	0.22	3.61	3.27
Carbohydrate (%)	75.2	78.52	61.86	63.61
Energy (K cal)	363.6	355.9	350.2	351.5

4. Proximate Analysis of flaked sample

Samples	Shashtika *Shali*	White rice	Green gram	Horse gram
Moisture (%)	9.65	9.89	8.53	8.12
Protein (%)	8.54	8.74	21.93	20.91
Fat (%)	2.85	0.96	2.42	1.25
Ash (%)	1.53	0.92	3.2	3.4
Carbohydrate (%)	77.43	79.49	63.92	66.32
Energy (K cal)	369.5	361.6	360.5	360.2

DISCUSSION

In order to attain the complete benefits from *Shodhana* therapies and make them easy for patients to prepare and use appropriately there is a necessity to give modern touch to our classical preparations without compromising with its nutritive values when compared to raw and the modified form.

The soaked rice should not contain excess of water to facilitate further procedure, the soaked rice was steamed without putting whistle to the pressure cooker in order to avoid cooking of rice where we want only the softening of the grain which helps in pressing the grain to flatten in flaking machine. The rice was easily breakable into 2 halves after steaming procedure. After steaming the steamed samples were dried for 5-10 ten minutes in room temperature only. To ease the next step i.e. Flaking process. Presence of excess water makes the samples to stick to the flaking machine.

Flaking procedure is the technique which is being extensively used in the modern food industries example: corn flakes, oats flakes etc. so this technique was made use to modify the structure and texture of the raw ingredients to flat and thin which in turn helps to reduce the cooking time of the raw samples. *Shashtika Shali* is one among the *Nithya Sevaniya Dravya* as mentioned in our classics, white rice (*Tandula*) being the staple food, *Mudga* (Green gram) being the *Sada Pathya* and *Kulattha* has many health benefits in *Sthoulya* and *Mutragata Rogas* and so on. Owing to the health benefits of these drugs which were made use in this study. The raw ingredients can be soaked in cold water also but the time of hydration will be more. So boiled water was used to soak the ingredients. There was no much difference in final product quality when compared to cold water and boiled water soaking but boiled water hasten the softening the raw drugs within the period of 30 minutes rather than soaking the ingredients in cold water for 4-5 hours. The flaked samples can be used for the preparation of *Peyadi* preparations in the classical reference of water ratios.

Flaked drug samples were reconstituted by putting in boiled water and within few minutes the preparations will be ready to be served. The *Prakshepaka Dravyas* can be added and used in case of *Krita Yusha* preparation.

CONCLUSION

The classical method of preparation of *Peyadis* were consuming more time for cooking due to usage of raw

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drugs as it is. So to reduce the time and fuel consumption, the flaking technique was incorporated in order to make the raw samples to cook faster where in our classics also explains like '*Samsakarohi Gunantaradana Muchayate*'. Flaking machine was used for this process and this process was the most convenient and more economical technique without compromising much with the nutritive values when compared to the raw samples.

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