



STUDY ON THE PRIME IMPORTANCE OF NUTRITION AND ITS INFLUENCE ON HIERARCHY DESCRIBED IN *SAMSARJANA KRAMA*

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ABSTRACT

Background: After *Vamana* and *Virechana*, *Agni* (digestive fire) gets diminished. It is restored by the administration of *Samsarjana Krama* in which the food preparations are fed gradually starting from *Peya*, *Vilepi*, *Akrita Yusha* with *Odana*, *Krita Yusha* with *Odana*, *Akrita Mamsarasa* with *Odana*, and *Krita Mamsarasa* with *Odana* in *Peyadi Samsarjana Krama*. In *Tarpanadi Krama*, instead of *Peya- Svacha Tarpana* (light) and instead of *Vilepi- Ghana Tarpana* (thick) are advised. This is followed by *Yusha- Akrita* and *Krita* and *Mamsarasa – Akrita* and *Krita*. **Aims and Objectives:** To analyse the nutritional values of food preparations mentioned in *Samsarjana Krama* and to know the reason for the specific sequence mentioned in *Samsarjana Krama* on the basis of its nutritional importance. **Methods:** The raw materials used for the preparation of *Peyadi* and *Tarpanadi Samsarjana Krama* were procured, verified and prepared according to Classical Ayurvedic Texts. These preparations were further subjected to different tests for the estimation of Moisture, Carbohydrates, Protein, Fat, Fibers and Ash. **Results:** Based on the values obtained, it is found that the sequence in *Peyadi* and *Tarpanadi Samsarjana Krama* were also based on its nutritional importance. **Conclusion:** The sequential administration of food preparations of *Peyadi* and *Tarpanadi Samsarjana Krama* helped in gradual increase of Carbohydrates, Protein and Fats in the human body which substantiates the reason for particular sequence mentioned by our Acharyas.

Keywords: *Peya*, *Vilepi*, *Yusha*, *Mamsarasa*, *Samsarjana Krama*

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INTRODUCTION

According to Ayurveda, health is defined as the equilibrium state of *Dosha*, *Dhathu*, *Agni* and proper evacuation of *Mala* from the body^[1]. *Agni* plays a vital role in nurturing the health.

In *Samsarjana Krama*, food is fed gradually considering the *Shuddhi* attained by the person. After *Vamana* and *Virechana* the food sequence followed are *Peya*, *Vilepi*, *Akrita Yusha* with *Odana*, *Krita Yusha* with *Odana*, *Akrita Mamsarasa* with *Odana*, and *Krita Mamsarasa* with *Odana* in *Peyadi Samsarjana Krama*^[2].

Peya is prepared by adding one part of *Shuka Dhanya* with fourteen parts of water^[3] and contains equal quantity of solid and liquid portion^[4]. It is useful in the conditions like *Kshuth* (hunger), *Trishna* (thirst), *Glani* (fatigue), *Daurbalya* (general debility), *Kukshiroga* (*UdaraRoga*), *Jwara* (fever), *Swedajanaka* (causes sweating in the body), helps to increase the digestive fire and also in the movement of *Vata* (flatus) and *Varchas* (stool)^[5].

After the administration of *Peya*, more solid food is given in the form of *Vilepi* which is prepared by adding one part of *Shuka Dhanya* with four parts of water^[6]. It contains more of the solid portion and almost no portion of liquid^[7]. It acts as *Tarpaka* (nourishing), *Grahi*

(stopping), *Laghu* (light for digestion), and *Hridya* (cardio tonic)^[8].

The next is *Yusha*. It is prepared by adding one part of *Shimbi Dhanya* with fourteen parts of water and is slightly thicker than *Peya*^[9]. It is considered as *Balakaraka* (energy provider), *Kantya* (good for voice), *Kaphanashaka* (alleviates *Kapha* and *Pitta*), *Laghu* (light for digestion)^[10]. Here, first *Akrita Yusha* i.e. *Yusha* without subjecting to salt, spices and unctuous substances like oil, ghee is given with *Odana* followed by the administration of *Krita Yusha* which is subjected to seasoning with salt, spices and unctuous substances^[11] is administered with *Odana*.

Next food item given is *Mamsarasa*, prepared by adding three parts of *Mamsa* with eight parts of water, containing more of the liquid portion^[12], administered along with *Odana*. It is *Prinana* (nourishing), *Parama Hridya* (best cardio tonic), considered as *Amrita* (ambrosia) for those who are *Shushya* (emaciated), *Krishna* (lean), *Vyadhimukta* (when disease is cured), and have *Ksheena Retasa* (less semen count). It provides with *Bala* (strength), *Varna* (complexion) and is good for voice. It cures many diseases when taken in prescribed dosage^[13]. Here, first *Akrita Mamsarasa* i.e. *Mamsarasa* without subjecting to salt, spices and unctuous substances like oil, ghee is given with *Odana* followed by the administration of

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Krita Mamsarasa which is subjected to seasoning with salt, spices and unctuous substances^[14] is administered with *Odana*. *Odana* is prepared by adding one part of *Tandula* (rice) with five parts of water^[15].

In special conditions like *Kapha Pitta* predominance, *Madyapa* (Consumes alcohol daily), if *Kapha* and *Pitta* are partially expelled due to *Ayoga* of *Vamana* and *Virechana*, *Peyadi Krama* if administered can cause *Srothorodha* (obstruction to body channels) due to *Abhishyandi Guna* (increasing secretion in the body)^[16].

In the above conditions, instead of *Peya-Swacha Tarpana* (light) and instead of *Vilepi-Ghana Tarpana* (thick), are advised^[17]. This is followed by *Yusha- Akrita* and *Krita* and *Mamsarasa – Akrita* and *Krita* along with *Odana* similar to *Peyadi Krama*.

Swaccha Tarpana is prepared by adding one part of *Laja* (Parched rice) in fourteen parts of water and *Ghana Tarpana* by adding one part of *Laja* (Parched rice) in four parts of water, similar to that of *Peya* and *Vilepi*.

Nutritional analysis of these dietary preparations helps us in understanding the importance of *Samsarjana Krama* explained in classical Ayurvedic texts.

The amount of Moisture, Carbohydrates, Protein, Fat, Fibers, Ash in *Peyadi* and *Tarpanadi* preparations provides additional

proof for the particular sequence described in *Samsarjana Krama*.

On the basis of the importance and its wide use, the aforesaid preparations, these are selected to evaluate their nutritional composition and their influence in maintaining the specific order in the *Samsarjana Krama*.

Thus here an effort is made to analyze the nutritional values of these food preparations considering its importance on human body after *Vamana* and *Virechana Karma*.

AIMS AND OBJECTIVES

To analyse the nutritional value of food preparations mentioned in *Samsarjana Krama* and to know the reason for the specific sequence mentioned in *Samsarjana Krama* on the basis of its nutritional importance.

MATERIALS AND METHODS

The raw materials used for the preparation of *Peyadi* and *Tarpanadi Samsarjana Krama* were procured, verified and prepared in the Department of Panchakarma, Alva's Ayurveda Medical College, Moodubidire.

Table 1 showing the Method of Preparation of *Peyadi Samsarjana Krama*

Food preparation	Ratio (<i>Ahara Dravya</i> and water)
<i>Peya</i>	1:14 ^[3]
<i>Vilepi</i>	1:04 ^[6]
<i>Yusha</i>	1:14 ^[9]
<i>Mamsarasa</i>	3:8 ^[12]
<i>Odana</i>	1:5 ^[15]

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Krita Yusha and *Krita Mamsarasa*: Prepared by processing it with salt, spices and unctuous substances^{[11], [14]}

Akrita Yusha and *Akrita Mamsarasa*: Prepared without adding any of the spices, salt and unctuous substances^{[11], [14]}

Tarpanadi Samsarjana Krama Preparation

Swacha Tarpana preparation is done by adding one part of *Laja* (Parched rice) cooked in fourteen parts of water and *Ghana Tarpana* preparation by one part of *Laja* (Parched rice) cooked in four parts of water.

Fig.1 Peya



Fig.2 Vilepi



Fig.3 Akrita Yusha



Fig.4 Krita Yusha



Fig.5 Akrita Mamsarasa



Fig.6 Krita Mamsarasa



Fig.7 Swaccha Tarpana

Fig.8 Ghana Tarpana



These preparations were further subjected to different tests for the estimation of Moisture, Carbohydrates, Protein, Fat, Fibers and Ash at

Nitte University Centre for Science Education and Research (NUCSER).

Table 2 showing the Tests carried out for the Nutritional Analysis

Food preparations	Method of analysis
Total Moisture	• Vacuum Oven Method
Total Carbohydrates	• Anthrone Method
Total Protein	• Kjheldal Method
Total Fat	• Soxhelt Method
Fibers	• Acid Alkali Method
Ash	• Combustion Method

The prepared samples were estimated for their chemical composition such as Moisture, Carbohydrates, Protein, Fat, Fibers and Ash. All the analysis was carried out according to the method given by AOAC 2000.

RESULT

Quantitative Analysis of Nutrition present in the preparations of *Peyadi* and *Tarpanadi Samsarjana Krama*

Table 3 Showing the Results of Nutritional Analysis

Samples	Moisture (%)	Carbohydrates (%)	Protein (%)	Fat (%)	Fibres (%)	Ash (%)
<i>Peya</i> (Dw basis)	89.2	92.305	2.70±1.1	1.69±0.6	3.26±0.8	0.045±0.009
<i>Vilepi</i> (Dw)	79.15	88.05	8.12±0.9	1.10±0.1	1.83±0.8	0.906±0.17

basis)							
<i>Akrita Yusha</i> (Dw basis)	82.57	60.89	21.24±0.9	1.36±0.8	2.364±0.2	3.781±0.02	
<i>Krita Yusha</i> (Dw basis)	77.68	77.2	18.22±0	10.73±0.9	3.22±0.1	1.288±0.01	
<i>Akrita Mamsarasa</i> (Ww basis)	98.79	ND	41.43±1.1	3.32±0.08	ND	2.089±0.09	
<i>Krita Mamsarasa</i> (Ww basis)	89.81	ND	44.82±0.9	3.72±0.3	ND	0.421±0.4	
<i>Swaccha Tarpana</i> (Dw basis)	93.1	86.46	6.38±1.8	5.92±0.01	ND	0.86±0.2	
<i>Ghana Tarpana</i> (Dw basis)	81.78	79.94	9.60±0.7	3.63±0.5	4.96±1.6	1.22±0.6	
<i>Odana</i> (Dw basis)	72.05	88.1	7.35±1.1	3.59±0.2	ND	0.96±0.3	

[ND: Not Detected (Below detectable limit); Dw: Dry Weight basis; Ww: Wet Weight basis]

DISCUSSION

Samsarjana Krama is the administration of food in an orderly manner based on the *Shuddhi* attained by the person. After *Vaman* and *Virechana*, *Agni* gets weakened, hence a systemic diet protocol has to be followed starting from *Laghu* (light) to *Guru* (heavy) *Ahara*. The order of food preparations consumed involves *Peya*, *Vilepi*, *Akrita Yusha* with *Odana*, *Krita Yusha* with *Odana*, *Akrita Mamsarasa* with *Odana*, and *Krita Mamsarasa*

with *Odana* in *Peyadi Samsarjana Krama*^[2]. In *Tarpanadi Krama*, instead of *Peya-Swacha Tarpana* (light) and instead of *Vilepi-Ghana Tarpana* (thick) is advised^[17].

A beautiful comparison has been made by Acharya Charaka between the external and internal fire called as *Agni*. As a small spark of fire gets kindled into a big and stable flame when fed gradually with *Trina* (dry grass), *Gomaya* (cow dung cakes), similarly the internal fire or the enzymes in the body

Sushmitha Bekal, Vikram Kumar, Subrahmanya Padyana. Study on the prime importance of nutrition and its influence on hierarchy described in *Samsarjana Krama*. Jour. of Ayurveda & Holistic Medicine, Volume-IX, Issue-VI (Nov.-Dec.2021) responsible for digestion and metabolism in a purified person, grows strong and stable and becomes capable of digesting all types of food by the gradual administration of *Samsarjana Krama*^[18].

Here, all the food articles used for *Peyadi* and *Tarpanadi Samsarjana Krama* has been properly cooked with the appropriate ratio of water and grinded into a fine paste for further nutritional analysis. The rice used for the preparation of *Peya*, *Vilepi* and *Odana* is Sona Masuri (*Oryza sativa* Linn.) as it is commonly used in day to day life. There were few practical difficulties while cooking rice with the above mentioned ratios of water. So it has been soaked overnight which resulted in the softening of rice particles. *Akrita* and *Krita Yusha* were prepared using *Mudga* (*Phaseolus radiatus* Linn.) where the latter had salt, ghee and spices in it. It has been soaked for 3 hours for the purpose of softening. *Aja Mamsa* was used for the preparation of *Akrita* and *Krita Mamsarasa*, *Krita* being processed with salt, unctuous substances and spices. *Swaccha* and *Ghana Tarpana* were prepared using *Laaja* (*Oryza sativa* Linn.) because it is even lighter for digestion when compared to *Shuka Dhanya* i.e. sona masuri rice as it was subjected to high temperature on sand while manufacturing.

It can be observed that all the tests have been carried out on a dry weight basis except for the samples of *Akrita* and *Krita Mamsarasa*. As

a result, sample 5 and 6 will preferably show lower values as the tests for these samples were conducted on wet weight basis.

The first test that has been carried out is for the estimation of Moisture. It's been done using Vacuum Oven Method. As per the results are concerned, it can be noted that *Peya* has got more of liquid portion of 89.2% and *Vilepi* of 79.15%. After *Vamana* and *Virechana*, more of the water content will be lost from the body. This lost fluid is corrected by giving *Peya* initially followed by the latter. *Akrita*, *Krita Yusha* and *Mamsarasa* are consumed along with *Odana*. So it is not of much significance here. Even in *Tarpanadi Samsarjana Krama*, initially more liquid is supplemented in the form of *Swaccha Tarpana*. *Swachha Tarpana* shows the moisture of 93.1% and *Ghana Tarpana* of 81.78%.

The next test carried out is for the estimation of Carbohydrates by Anthrone Method. Here, *Peya* showed more Carbohydrates of 92.305% followed by *Vilepi* of 88.05%. It can be observed that *Peya* and *Vilepi* are rich source of carbohydrates. The smallest unit of carbohydrate is saccharides which can be easily digested by the human body. Hence *Peya* and *Vilepi* act as instant energy givers. Carbohydrates in *Akrita* and *Krita Mamsarasa* were below the detectable limit, but as it is consumed along with *Odana*, human body

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does get carbohydrate supplementation but not as much as *Peya* and *Vilepi*. *Swaccha* and *Ghana Tarpana* which is given instead of *Peya* and *Vilepi* showed decreasing value of 86.46% and 79.94% of Carbohydrates.

Next is protein, estimated using Kjheldal Method. After the supplementation of *Peya*, *Agni* will be in better condition, so plant based protein is supplemented in the form of *Akrita Yusha* and then a little amount of fat along with protein is ingested in the form of *Krita Yusha*. *Akrita Yusha* showed the protein of $21.24 \pm 0.9\%$ of and *Krita* of $18.22 \pm 0\%$. Then the animal protein is given in the form of *Akrita* and *Krita Mamsarasa* which is about $41.43 \pm 1.1\%$ and $18.22 \pm 0\%$ successively. As all of these food preparations are consumed along with *Odana*, human body gets a combination of Carbohydrates, Protein and Fat in this stage. *Swaccha* and *Ghana Tarpana* presented with more protein of $6.38 \pm 1.8\%$ and $9.60 \pm 0.7\%$ when compared to *Peya* and *Vilepi*. Procedures like *Vamana* and *Virechana* results in the expulsion of Hcl and other gastric juices. So providing the body with protein helps in the breaking down of Hcl and enzymes called proteases into smaller chains of amino acids. These amino acids move into intestine which results in the release of enzymes and a bicarbonate buffer from pancreas which helps in the reduction of acidity of digested food. This reduction allows more of the enzymes to

break down the amino acid chains into individual amino acids and thus helps in digestion^[19].

It is followed by the test for the estimation of Fat by Soxhelt Method. *Akrita Yusha* exhibited the Fat of $1.36 \pm 0.8\%$ and *Krita* of $10.73 \pm 0.9\%$ which is due to the addition of ghee. It is succeeded by *Akrita Mamsarasa* which had $3.32 \pm 0.08\%$ and *Krita* of $3.72 \pm 0.3\%$ of Fat in them. Lesser value of *Akrita* and *Krita Mamsarasa* compared to *Krita Yusha* is because the tests for these samples have been carried out on wet weight basis. More diluted the sample, lesser will be the value. Now that the *Agni* has been properly ignited, the human body is then administered with *Mamsarasa* which is given in the form of *Akrita* and *Krita* along with *Odana*. Here more of the Fat, Protein and Carbohydrates are administered as the person becomes more capable of digesting the heavy food particles. Giving *Mamsarasa* at this stage helps in providing essential enzymes such as lipase, phospholipids which helps with the fat digestion in mouth by converting it into small drops. The next step in fat digestion happens when gastric lipase in the stomach further breaks down fats. As the stomach contracts, this process intensifies. The stomach can convert close to 30% of fats into diglycerides and fatty acids by about 2–4 hours after eating. Next, the contents of the stomach,

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including the diglycerides and fatty acids, travel to the small intestine. The liver releases bile, which contains lecithin, bile salts, and emulsifiers that help further break down fats. Bile grabs onto the fats, and the emulsifiers increase their surface area, making them easier for digestive enzymes to act on. Lipase from the pancreas further digests fats into monoglycerides and fatty acids^[20].

Then the test for estimation of Fibers is carried out using Acid Alkali method. There is no much significance of Dietary fibers here. *Ghana Tarpana* showed a highest value of $4.96 \pm 1.6\%$ of dietary Fibers followed by *Krita Yusha* of $3.22 \pm 0.1\%$. Dietary Fibers in the diet helps in reducing constipation.

Test for estimation of Ash is also being carried out. It is also not of much significance in *Samsarjana Krama*. Yet the test has been carried out which exhibited $0.045 \pm 0.009\%$ of ash in *Peya*, $0.906 \pm 0.17\%$ in *Vilepi*, $3.781 \pm 0.02\%$ in *Akrita Yusha*, $1.288 \pm 0.01\%$ in *Krita Yusha*, $2.089 \pm 0.09\%$ in *Akrita Mamsarasa*, $0.421 \pm 0.4\%$ in *Krita Mamsarasa*, $0.86 \pm 0.2\%$ in *Swaccha Tarpana*, $1.22 \pm 0.6\%$ in *Ghana Tarpana*, $0.96 \pm 0.3\%$ in *Odana*. Minerals are the main component of Ash. Hence we can say that the minerals which are lost during purificatory procedures are substituted by the minerals present in *Samsarjana Krama*.

From the above details it can be inferred that the nutritional analysis of *Peyadi* and

Tarpanadi Samsarjana Krama substantiates the rationality for the particular sequence mentioned by our Acharya's. After *Vamana* and *Virechana*, *Agni* will be diminished. So initially the human body is being supplied with more of Carbohydrates and Water content in the form of *Peya* and *Vilepi* as they provide instant energy. Once the *Agni* is regained, plant based Protein along with Carbohydrates is given in the form of *Akrita Yusha* and *Odana* followed by the administration of *Krita Yusha* with *Odana* which provides Protein, Carbohydrates and a little amount of Fat. Once the *Agni* regains its strength completely, more of Fat, animal based Protein and Carbohydrates is given in the form of *Akrita* and *Krita Mamsarasa* which is then followed by the consumption of normal diet. Even in case of *Tarpanadi Samsarjana*, *Swaccha* and *Ghana Tarpana* were proved to be rich sources of Carbohydrates as it is given instead of *Peya* and *Vilepi*. Hence it can be stated that our Acharya's had an idea about the Nutritional Values of preparations of *Peyadi* and *Tarpanadi Samsarjana Krama* and hence is their sequence.

This study mainly focused on pharmaceutico-analytical methods. Further, many more such works could be beneficiary to conclude its utility of *Samsarjana Krama* in various fields.

CONCLUSION

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Moisture, Carbohydrates, Protein, Fats, Fibers, Ash are the essential prime nutritional supplements to the human body. These are appropriately available in *Peyadi* and *Tarpanadi Samsarjana Kramokta Ahara*. The sequential administration of food preparations of *Peyadi* and *Tarpanadi Samsarjana Krama* helps in gradually increasing the digestive power and in restoring the energy levels in human body. Hence this study will prove that *Samsarjana Karma* (post purificatory diet) is more scientifically closer in nutritional point of view also.

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