

**SHARIR KRIYATMAK (PHYSIOLOGICAL) STUDY OF MAASH  
DRAVYA AND ITS EFFECT IN MAMSAKSHAYA WITH SPECIAL  
ASPECT TO BRIHANA KARMA: AN OBSERVATIONAL CLINICAL  
TRIAL STUDY**

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Article Received on  
24 Dec. 2020,

Revised on 14 Jan. 2021,  
Accepted on 04 Feb. 2021

DOI: <https://doi.org/10.17605/OSF.IO/V3HT6>

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**ABSTRACT**

*Ayurveda* is a science of life, it provides service to mankind in which body physiology is emphasized to understand etiology and pathogenesis of a disease. Human body is mainly composed of *Doshas*, *Dhatus* and *Malas*. The healthy state is the equilibrium between *Dosha- Dhātu-Mala* in the body while the unhealthy state is disturbance of this equilibrium which is manifested in the body either as *Kshaya* or *Vṛiddhi*. The *Kshaya* or hypo functioning of *Mamsa Dhātu* in the body is clinically manifested by symptoms like emaciation, loss of protein and fatty layer from above organs, lethargic and loose blood vessels structure, lax of joints due to lose tendons and muscle, malnutritive disorders, muscle wasting. This impairs overall

health of human, thus leading to lack of immunity. It occurs mainly due to diminished *Prithvi Mahabhuta* in the body, improper diet. *Mamsa Kshaya* is a *Vata* dominant disease. So, its management is done by *Santarpana Chikitsa* (proper nourishment) or *Brihana Chikitsa*. The selected drug *Maash* has properties like *Vatanulomana*, *Anilapaha*, *Brihana*, *Sransana*, *Tarpana*, *Balya*, *Snigdha* etc. So, it is decided to study the drug *Maash* and whether it is effective in *Mamsakshaya*.

**KEYWORDS:** *Brihana Chikitsa*, *Dhātu Dushti*, *Maash Dravya*, *Mamsa Dhātu*, *Mamsakshaya*.

## INTRODUCTION

आयुरस्मिन् विद्यत्सनेन वा आयुर्विन्दतीत्यायुर्वेदः ॥ <sup>[1]</sup> (सु. सू. १/२३)

It defines the health and factors which are important for its maintenance and promotion. Ayurveda is way or means through which the life can be attained or known. The person is said to be healthy, if he/she has balanced or equilibrium between three *Doshas* (bio- energies), seven *Dhatus* (body tissues and components), *Mala* (waste products, excretory functions), and *Agni* (digestive fire), along with happy and balanced state of soul, all sense organs and mind. *Dosha* and *Mala* are not structural one and stable too but the basic structural architectures of the body are formed with *Dhatus*. These *Dhatus* are basically the body tissues which are responsible for functioning of the systems and organs and the structure of body. Each *Dhatu* has its own specific Karma.

Among these *Mamsa Dhatu* is very important body tissue. It is third one in the sequence of seven *Dhatu*. According to modern science *Mamsa Dhatu* refers directly to the muscle and indirectly to the ligaments and skin. *Mamsa Dhatu* has *Panchabhautik* constitution of *Pruthvi Mahabhuta*. *Vasa* (Omentum) and *Tvacha* (Skin and its layers) are *Updhatu* (Accessory tissue) and *Kha mala* as its excretory product.<sup>[2,3]</sup> *Lepana* is the *Vishesha* karma of *Mamsa dhatu*.<sup>[4]</sup> *Lepana* (binding, coating) – Muscle tissue coats the bony skeleton in body whereas the same musculature in the form of muscle tissue and epithelial tissue coats whole body in the form of skin and its layers. The homeostasis is the equilibrium between *Dosha- Dhatu- Mala* in the body while the unhealthy state is disturbance of this equilibrium which is manifested in the body either as *Kshaya* or *Vṛiddhi*. Any kind of abnormality or deviation in the process of formation *Mamsa Dhatu* leads to disorders oriented with *Mamsa dhatu*. The *Kshaya* or hypo functioning of *Mamsa Dhatu* in the body is clinically manifested by symptoms<sup>5</sup> like emaciation, loss of protein and fatty layer from above organs, lethargic and loose blood vessels structure, lax of joints due to lose tendons and muscle, malnutritive disorders, muscle wasting. This impairs overall health of human health, thus leading to lack of immunity and surrendering the body to any disease easily. So, it carries an important role for nourishment and endurance of life.

*Mamsa Kshaya* is an *Apatarpana Janya Vyadhi* (diseases caused due to malnutrition or nutritional imbalance). *Mamsa Kshaya* is described in *Kiyantahshirsiya Adhyaya* by *Acharya Charaka*. It occurs mainly due to reduced or diminished *Prithvi Mahabhuta* in the body, improper diet. *Mamsa Kshaya* is a *Vata* dominant disease. So, its management is done by

using *Santarpana Chikitsa* (proper nourishment) or *Brihana Chikitsa*. *Brihana Karma* refers to phenomenon of proper healthy growth of *Dosha* and *Dhatus*. This *Brihana Karma* is done by means of two ways viz – *Aahara* and *Aushadhi* (medicines).

So, for the management of *Mamsa Kshaya*, we can use *Aahariya Dravya* which is similar direct to *Mamsa Dhatu*. Here for study we used *Maash (urad dal)* for group A in the form of *Modaka (Laddu)*. Group B is a control group. Roasted wheat flour is used as a placebo. *Maash* has properties like It has properties like *Mamsa*.<sup>[6]</sup> *Mamsavardhaka*, *Mamsaprada*, *Baladhya*, *Snigdha*, *Vatanulomana*, *Anilapaha*, *Brihana*, *Sransana*, *Tarpana*, *Balya*, *Snigdha* etc. It has *Madhura Rasa*, *Ushna Veerya* and *Madhura Vipaka*. It is the best alleviating food for vitiated *Vata Dosha*. Roasted wheat flour (*Godhuma*) is also *Vatahara*, *Madhura rasa*, *Sheeta Virya*, *Jeevniya*, *Brihaniya*, *Vrushya*, *Snigdha*, *Guru*.<sup>[7]</sup>

### Aim

To study the *Maash Dravya* and its effect in *Mamsakshaya* with special aspect to *Brihana Karma*.

### Objectives

- 1) Assessment of effect of *Maash Dravya* in *Mamsakshaya*.
- 2) Detail study *Mamsakshaya* by classical sign and symptoms.
- 3) Detail study the *Brihana Karma* of *Maash dravya*.

## MATERIAL AND METHODS

### Materials

1. Classical of *Mamsa Dhatu*.
2. Classical sign and symptoms of *Mamsa Dhatu Kshaya*.
3. Investigations according to *Ayurvedic* and Modern parameters.

### Methods

Patients had classical signs and symptoms of *Mamsa Kshaya* was selected for the study from O.P.D. of our Hospital, of age group 20 years to 40 years' patients.

### Location of study

Patients reported in the OPD of our Hospital were carefully selected according to the diagnostic, inclusive criteria.

**Plan of study**

This study was carried out under two headings, viz. Conceptual study and Applied study.

**A. Conceptual study**

For this study, the conceptual and basic materials was collected from Ayurvedic classics as *Bruhatrayee* and *Laghutrayee*, mainly the *Charaka & Sushruta Samhita* and other classics with available commentaries as well as various reference books to be studied.

Various Publications, Research papers and Articles, Text books have been referred to collect literary material. All these collected literary materials have been critically analyzed and also assessed and evaluated as per hypothesis and problem selected here. Related portion of the modern medical science has also been compiled and considered.

**B. Applied study**

For this observational study the materials and methods include registration of the Patients as per criteria of inclusion as well as exclusion. Informed written consent of the patients had taken. The special research proforma or case record form filled incorporating all required examinations and detailed history of patient as well as the investigations conducted with the use of *Ayurvedic* and modern techniques had made. For the present study, 60 patients of *Mamsa Kshaya* had taken from the Outdoor Patient Department of our Hospital. Patients were selected on the basis of inclusion and exclusion criteria. Patients were observed on the basis of classical signs and symptoms of *Mamsa Kshaya lakshanas*.

**Sample Size:** 60 Patients

30 – treatment group (group A)

30 – control group (group B)

**I. Inclusive criteria**

- a. Patient between 20-40 years age group
- b. Patient having low body weight (15-20% less than normal for their age and height).
- c. Lower body mass index (<18.5)
- d. Patient with clinical sign and symptoms of *Mamsakshaya*.
- e. Patient having good *Agnibala* (digestive power).

**II. Exclusive criteria**

- a. Patient having history of chronic diseases like Tuberculosis, Diabetes mellitus, Cancer and Auto immune disorders.
- b. Patient having disease which causes weight loss like HIV.

- c. Patient less than 20 and more than 40 years of age.

### III. Withdrawal criteria

At any stage of this study patient who is not willing to participate in this study.

### Investigation

1. CBC (Complete Blood Count)
2. Random Blood Sugar level

### Criteria of assessment

#### Subjective criteria<sup>[8]</sup>

The probable factors of *Mamsa Kshaya Lakshanas* are compiled with the help of some questions. Each *Lakshanas* has 4 grading as 0 to 3. They are as follows-

#### 1. *Aayasa* (lassitude)

0: No *Aayasa*

- 1: Little *Aayasa* in doing hard work
- 2: Moderate *Aayasa* in doing hard work
- 3: Excessive *Aayasa* in doing hard work.

#### 2. *Glani* (giddiness)

0: No *Glani*

- 1: Feel *Glani* at any level of physique but not appear on the face
- 2: Little *Glani* at any level of physique, senses and psyche
- 3: Excessive *Glani* at any level of physique, senses and psyche

#### 3. *Dhamani Jala Darshana* (prominent vasculature)

0: No visible easily even after pressure

- 1: Visible and prominent on pressure
- 2: Visible
- 3: Prominent

#### 4. *Sthula Parva* (knee, elbow, ankle, wrist joint)

0: Deeply seated with extra fat

- 1: Covered
- 2: Prominent
- 3: Relatively look larger.

#### 5. *Kapola gata vasa* (pad of fat on cheek)

0: Cheeks everted

- 1: On surface level
- 2: Cheeks inside
- 3: Cheeks inside with zygomatic bones prominent.

#### **6. *Daurbalya* (fatigue)**

- 0: Not feeling *Daurbalya* in doing any hard work
- 1: Not feeling *Daurbalya* in doing easy work
- 2: Feeling *Daurbalya* in doing little work
- 3: Feel *Daurbalya* in rest position.

#### **7. *Shoka* (grief)**

- 0: No sorrow even for reasonable cause
- 1: Sorrowful only for reasonable cause
- 2: Sorrowful even unreasonable cause without anybody gesture
- 3: Most sorrowful for no cause, unable to control his feeling, body gestures.

#### **8. *Nidra* (sleep)**

- 0: 6-8 h sleep
- 1: 6-8 h sleep but disturbed once
- 2: <6 h sleep but disturbed twice
- 3: <6 h sleep but disturbed frequently.

### **Objective criteria**

Anthropometrical parameters such as

1. Weight
2. Body mass index
3. Mid upper arm circumference
4. Thigh circumference
5. Chest circumference

### **Preparation of *Maash Modaka***

It is prepared same as the preparation of *Modaka* (*Laddu*). The main ingredients are black gram, homemade *Goghruta* and *Khada Sharkara*. The black gram and *Khada Sharkara* were taken in the form of *Churna* (fine powder). First of all, 25gm of the black gram powder was taken. Then the *Goghruta* was taken twice the black gram i.e. 50ml. The black gram was fried in *Goghruta* upto its colour change like light brown. This procedure was done on *Mandagni*. After the colour change, turned off the flame. Then the *Sharkara* powder was

added to this mixture in same quantity of black gram i. e. 25 gm. Then this mixture was kept for cool for 5 min. After 5 min, the *Modaka* was prepared weighing 25 gm.

### Preparation of roasted wheat flour

50 gm of wheat flour was taken in the pan. Then it was fried on low flame upto its colour change as light brown same as *maash modaka*. Then the flame turned off. This mixture was kept for cooling.

## OBSERVATION AND RESULTS

**Table no. 1: Comparison of objective criteria of both groups by unpaired 't' test.**

Sr. no	Parameter	Group	Mean	SD	T	Df	P value	Result
1	Weight	A	4.3	1.263	9.268	58	<0.0001	Extremely significant
		B	1.883	0.665				
2	BMI	A	1.683	0.518	-8.642	58	<0.0001	Extremely significant
		B	0.767	0.262				
3	Mid Arm Circumference	A	4.567	1.568	-9.856	58	<0.0001	Extremely significant
		B	1.167	1.053				
4	Chest Circumference	A	3.63	1.473	-7.23	58	<0.0001	Extremely significant
		B	1.167	1.147				
5	Thigh Circumference	A	4.13	4.216	3.571	58	.000362	Significant
		B	1.3	1.055				

By applying Unpaired t-test to objective criteria, as value of p is <0.05 in all parameters, so significant difference was observed between the mean of difference of Group A and Group B in Objective Parameters. So, it is concluded that *Maash* is more effective than roasted wheat Flour to reduce all the objective parameters in *Mamsakshaya*

**Table no. 2: Wilcoxon Signed Ranks Test to subjective criteria in the Group A.**

Symptom	BT/AT	N	Mean	SD	W	P	Significant or Non-Significant
<i>Aayasa</i>	BT	30	2.633	0.614	-4.782	<.00001	Significant
	AT	30	0.067	0.254			
<i>Glani</i>	BT	30	2.3	0.535	-4.782	<.00001	Significant
	AT	30	0.1	0.305			
<i>Dhamani Jala Darshan</i>	BT	30	2.733	0.449	-4.782	<.00001	Significant
	AT	30	0.4	0.621			
<i>Sthula Parva</i>	BT	30	2.767	0.430	-4.782	<.00001	Significant
	AT	30	0.567	0.626			
<i>Kapola Gata Vasa</i>	BT	30	2.733	0.583	-4.782	<.00001	Significant
	AT	30	0.167	0.379			
<i>Daurbalya</i>	BT	30	2.267	0.449	-4.782	<.00001	Significant
	AT	30	0.033	0.182			



Shoka	BT	30	1.067	0.868	-3.621	.0003	Significant
	AT	30	0.33	0.479			
Nidra	BT	30	2.6	1.037	-4.457	<.00001	Significant
	AT	30	0.1	0.305			

In Group A, as value of p is far less than 0.05 in all parameters, extremely significant difference was observed between mean of BT and AT score in *Mamsakshaya* symptom. Hence it is concluded that *Maash* is highly effective to reduce *Mamsakshaya* symptom.

## Group B

Table no. 3: Wilcoxon Signed Ranks Test to subjective criteria in the Group B.

Symptom	BT/AT	N	Mean	SD	W	P	Significant or Non-Significant
Aayasa	BT	30	2.4	0.498	-4.7821	<.00001	Significant
	AT	30	0.267	0.583			
Glani	BT	30	2.267	0.521	-4.7821	<.00001	Significant
	AT	30	0.533	0.681			
Dhamani Jala Darshan	BT	30	2.567	0.504	-4.1069	<.00001	Significant
	AT	30	1.8	0.761			
Sthula Parva	BT	30	2.767	0.430	-3.823	.00014	Significant
	AT	30	2.033	0.718			
Kapola Gata Vasa	BT	30	2.467	0.507	-4.5407	<.00001	Significant
	AT	30	1.43	0.728			
Daurbalya	BT	30	2.133	0.346	-4.7821	<.00001	Significant
	AT	30	0.033	0.183			
Shoka	BT	30	0.933	0.254	-2.8031	<.00001	Significant
	AT	30	0.6	0.498			
Nidra	BT	30	1.4	0.968	-4.0145	<.00001	Significant
	AT	30	0.6	0.770			

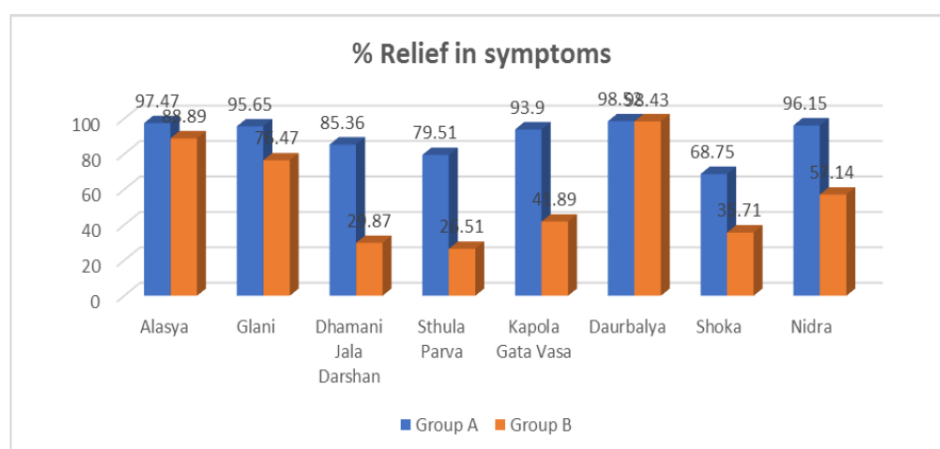
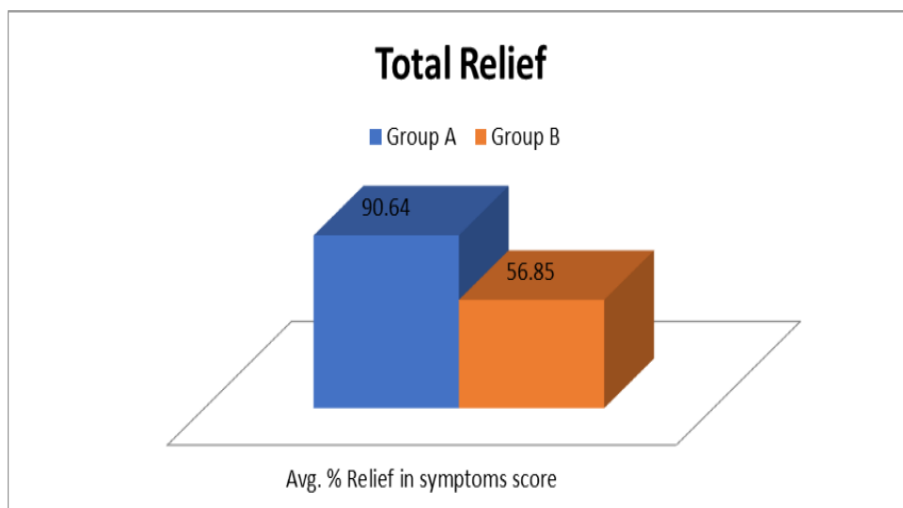


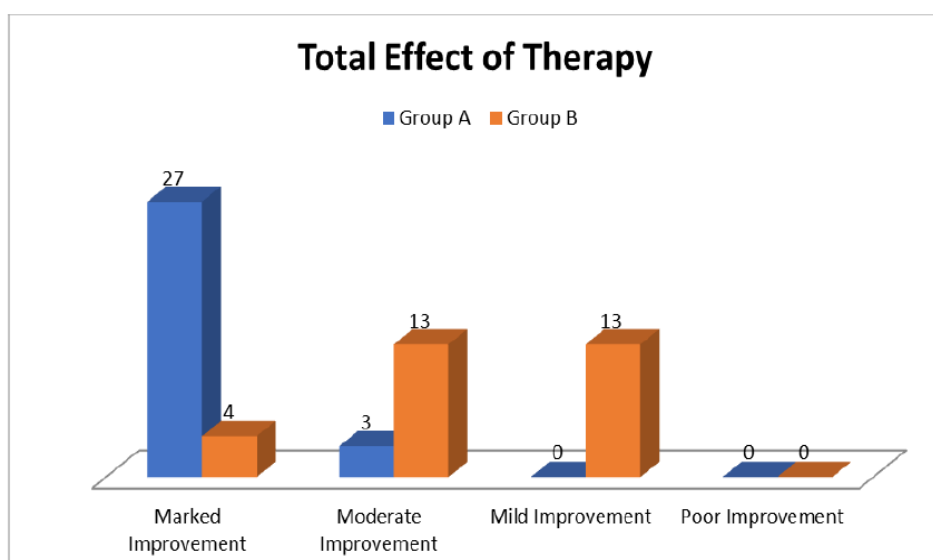
Figure 1: Shows average % relief in symptoms of both groups.





**Figure no. 2: Shows average % relief in Patients and In symptoms.**

It was observed that Average % Relief is more in Group A than Group B.



**Figure No. 3: Shows Average % Relief in Patients and in Symptoms.**

Group A has shown better effect than Group B to improve % relief in Patients. Hence in overall effect of therapy *Maash* is more effective than roasted wheat Flour in *Mamsakshaya*.

### Statistical analysis

This study was aimed to observe the efficacy of *Maash* in patients suffering from *Mamsakshaya*. Patients were divided randomly in two Groups. In Group A, *Masha* was given to the patients and in Group B Wheat Flour was given to the patients.

Further to find the effect of *Maash* in *Mamsakshaya* between the two different groups Wilcoxon Signed Test and Mann Whitney U Test to the qualitative data was applied.

**Group A – *Maash*.**

**Group B - roasted wheat Flour.**

For every statistical analysis, significance level accepted at 5% at 95% confidence limit.

### **Interpretation**

In subjective and objective parameters, as value of p is far less than 0.05, extremely significant difference was observed between mean of BT and AT score in *Mamsakshaya* symptoms in both groups. Hence *Maash* and roasted wheat Flour both are effective to reduce *Mamsakshaya* symptoms.

After comparing both groups statistically by Mann Whitney test, there is significant difference observed between Group A and Group B. There is effect of *Maash Dravya* in *Mamsakshaya*.

### **DICCUSSION**

#### **Discussion on sex wise distribution**

In present study maximum i.e. 51.67 % of patients were Female and remaining 48.33 % patients were Male. It indicates that *Mamsa kshaya* is mostly found in females. Because in females higher BMR rate than male. Females cannot get enough nutrition from food. They are less health conscious.

#### **Discussion on age wise distribution**

In present study maximum i.e. 56.67% of patients were from age group 20-25. While 40% patients were from age group 26-30 and 3.33% patients were from age group 31-35. It shows that the mostly affected age group is between 20 to 30. This age group is mainly in *Vivardhman* Dhatu age group according to Acharya Sushruta. So, they have growing *Mamsa Dhatu*. Also, in this group are mostly students. They have more mental stress, busy schedule, eating more junk food than nutritious diet.

#### **Discussion of *maash dravya***

In Group A, as value of p is far less than 0.05, extremely significant difference was observed between mean and SD of BT and AT score in *Mamsakshaya* symptom. Hence it is concluded that *Maash* is highly effective to reduce *Mamsakshaya* symptom.

Here, for the treatment of *Mamsa Kshaya* I applied the '*Samanya Visheshha Siddhanta*' described by Acharya Charaka. According to this *Siddhanta*, for the growth of *Mamsa Dhatu* one can use *Dravya* which has similar to *Mamsa Dhatu* in *Dravyatah*, *Gunatah* (property), and *Karmatah*

It has following nutrient values per 100 g of black gram-protein-25.21g, energy – 341 Kcal, carbohydrates – 58.99 g, total fat – 1.64 g, cholesterol-0mg, Dietary fibre- 18.3 g, Na – 38 mg, K – 983 mg, Ca – 138 mg, Fe – 7.57 mg, Mg – 267 mg, P – 379 mg, Z – 3.35 mg, folates – 216 µg, vit A – 23 IU, vit C – 0 mg. So, it is very important for treatment in weight loss, malnutrition, constipation, osteoporosis, mental illness, general weakness, decrease in muscle mass, DM, heart diseases, skin problems, cancers.

### Discussion of roasted wheat flour

In Group B, as value of p is far less than 0.05, extremely significant difference was observed between mean and SD of BT and AT score in *Mamsakshaya* symptom. Hence it is concluded that Wheat Flour is highly effective to reduce *Mamsakshaya* symptom.

Wheat (*Godhuma*) is included in the *Shukadhnya varga*. It has following values per 100 g – starch – 66.8 g, total sugar – 1.7 g, vit E – 0.6 mg, thiamin – 0.30 mg, riboflavin – 0.07 mg, niacin – 1.7 mg, folate – 51 µg, dietary fiber – 20 g. the germ, vitamins B and E; and protein of wheat helps build and repair muscular tissue.

### Interpretation of the effect on objective criteria in both studies

By applying Unpaired t-test to objective criteria, as value of p is <0.05 in all parameters, so significant difference was observed between the mean of difference of Group A and Group B in Objective Parameters. So, it is concluded that *Maash* is more effective than wheat flour to reduce all the objective parameters in *Mamsakshaya*.

### Relation between *mamsa Kshaya* and *Maash dravya*

From above discussed data, the overall effect of therapy *Masha* is more effective in *Mamsakshaya*. It is because of it has properties like *Vatanulomana*, *Anilapaha*, *Brihana*, *Sransana*, *Tarpana*, *Balya*, *Snigdha* etc. It has *Madhura Rasa*, *Ushna Veerya* and *Madhura Vipaka*. It is the best alleviating food for vitiated *Vata Dosha*.

## CONCLUSION

Based upon the results of the study displayed in the form of tables, graphs and carefully discussed in the previous chapter and the following conclusion are drawn.

1. *Mamsa kshaya* has following features loss of fat and protein over trunk, hip, buttocks, face, both extremities, thorax, lax of joints, loose and lethargic vessels, muscles wasting and malnutritive disorders. Also, person cannot bare physical exercise, intake of food in large quantity, hunger, thirst, diseases.
2. *Maash* shows properties like *Mamsal*, *Mamsavardhaka*, *Mamsaprada*, *Brihana*, *Balya*, *Baladhya*, *Prithvi Mahabhuta Pradhana*, *Tarpana*, *Vatanulomana*, *Anilapaha*, *Stransana*, *Snigdha*, *Guru* etc as decribed in ancient *Samhitas*.
3. *Maash* has shown better effect to improve % relief in symptoms of *Mamsakshaya*. Hence in overall effect of therapy *Maash* is more effective in the treatment of *Mamsakshaya*.
4. We should reject the null hypothesis  $h_0$ , accept the alternate hypothesis  $h_1$  i.e. there is effect of *Maash Dravya* in *Mamsakshaya* and suggest to use *Maash Dravya* for treatment of *Mamsakshaya*.
5. In present study maximum i.e. 51.67 % of patients were Female and remaining 48.33 % patients were Male.
6. In present study maximum i.e. 56.67% of patients were from age group 20-25. While 40% patients were from age group 26-30 and 3.33% patients were from age group 31-35.
7. *Maash* extremely significant than wheat flour in objective parameters viz are weight, BMI, mid arm circumference, thigh circumference, chest circumference. Hence it is concluded that *Maash* is highly effective in objective parameters.
8. There is significant difference was observed in objective parameters viz are *Aayasa*, *Glani*, *Dhamanai Jala Darshana*, *Kapola Gata Vasa*, *Shoka*, *Nidra*, *Sthula Parva*, So, it is concluded that *Maash* is more effective to reduce symptoms in *Mamsakshaya*.
9. There is no significant difference was observed in *Daurbalya* symptom. So, it is concluded that *Maash* and roasted wheat flour are equally effective to *Daurbalya* symptom in *Mamsakshaya*.
10. *Maash* has shown better effect than wheat flour to improve % relief in patients. Hence in overall effect of therapy *Maash* is more effective than wheat flour in *Mamsakshaya*.

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