

AN INTERVENTIONAL STUDY TO EVALUATE THE PHYSIOLOGICAL RESPONSE TO THE DIET SUPPLEMENT IN THE FORM OF TILA TAILA (SESAME OIL), MAASHA (Vigna mungo) AND HINGU (Ferula asafoetida) IN ARTAVAKSHAYA

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ABSTRACT

Menstruation is an essential physiological function of women during their reproductive age. As per Ayurveda, normal menstruation is the indicator of healthy reproductive organ in which inter-menstrual period is one month, duration of blood flow is five days but not associated with pain or burning sensation. Lifestyle changes, physical and emotional stress alter the physiology of menstruation and ends with disruption of H-P-O axis leading to menstrual irregularities. “*Artavakshaya*” said in Ayurvedic classics, can be correlated to oligo and hypomenorrhoea by their signs and symptoms. *Acharyas* have mentioned the usage of *taila*, *maasha* and *pittaladravya* for the healthy functioning of *artava* in classics. *Artavakshaya* is the precursor of infertility and it affects mental state of women too. Its management with simple diet supplement is more desirable than administering medicines. **Objective:** To evaluate the physiological response to the diet supplement in the form of tilataila (sesame oil), *maasha* (*Vigna mungo*) and hingu (*Ferula asafoetida*) in *artavakshaya*.

Methodology: Females of age group 20-35years satisfying any one of the following three criteria were selected.

1. If interval between two menstrual cycles exceed 35days.
2. If duration of menstrual flow is two days or less.
3. Quantity of menstrual blood is very less (based on number of pads).

Their symptoms were assessed using the case proforma with grading. They were advised to take 5g *maashachoorna*, 5ml *tilataila* and 1g *hingu* along with breakfast for 90 consecutive days. The assessment of changes in symptoms was repeated on 30th, 60th and 90th day of intervention period. Hb, RBC, serum total cholesterol and serum progesterone were investigated before and after trial. **Result:** The results were analyzed statistically and showed improvement in clinical symptoms. The lab investigations such as Hb, RBC, serum total cholesterol and serum progesterone showed statistical significance. This

shows that there is physiological response to diet supplement in the form of *tilataila*, *maasha* and *hingu* in *Artavakshaya*. **Conclusion:** The main principles of management of *Artavakshaya* include *pittavardhaka* and *vatanulomaka* treatment. The drugs included in the diet supplement due to the *ushna*, *teekshna*, *sukshma gunas*, *pittavardhaka* and *vatahara* action improved the condition *Artavakshaya*.

Keywords: *Tilataila*, sesame oil, *maasha*, *Vigna mungo*, *hingu*, *Ferula asafoetida*, *Artavakshaya*.

INTRODUCTION

Mother is the most sacred and beautiful word in the world but the tragedy is that all women are not mothers. The prerequisite of the title 'Mother' is to have offspring. In this universe only females have been vested the power of creation next to the Almighty God. This is why Women are considered as reflection of the God in this world. But the root of the importance of women lies in their capacity of creation. This is the reason why the question of fertility is most important for women. All hazards that hamper the capacity of fertility attract unique attention for cure. Ayurvedic classics mention that *Artavadusti* is one of the causative factors for infertility.

Lifestyle changes, physical and emotional stress alter the physiology of menstruation and ends with disruption of H-P-O axis leading to many gynaecological problems including menstrual irregularities. Modern medical science gives hormonal treatment for the menstrual irregularities which have many side effects if continued for a long period.

Artavakshaya said in Ayurvedic classics, can be correlated to oligo and hypomenorrhoea by their signs and symptoms. *Acharya* has mentioned the usage of *taila*, *maasha* and *pittaladravya* for the healthy functioning of *artava* in classics. *Acharya Susrutha* has advised the intake of *maasha* and *tila* for *artavajanana* in *Artavakshaya*.¹ *Hingu (pittaladravya)* is *ushna*

and *sthreepushpajanana*². Moreover, these three are easily available in the kitchen itself. Considering these facts, the above mentioned diet supplement was selected for the study.

On account of modernization and urbanization, there is excess intake of spicy diet, fried food, stress and social problems; *Artavakshaya* has become a very challenging problem for students, working ladies or housewives. *Artavakshaya* is the precursor of infertility and it affects mental state of women too. So in this contemporary era, it is very important to consider "*Artavakshaya*". Its management with simple diet supplement is more desirable than administering medicines.

AIM AND OBJECTIVE

To evaluate the physiological response to the diet supplement in the form of *tilataila*, *maasha* and *hingu* in *artavakshaya*.

MATERIAL AND METHODS

For the present clinical study 30 females of age group 20-35 years suffering from *Artavakshaya* were randomly selected from the OPD of Govt. Ayurveda College Hospital Kannur.

Inclusion criteria:

Females of age group 20-35 years satisfying any one of the following three criteria:

1. If interval between two menstrual cycles exceed more than 35days.

2. If duration of menstrual flow is two days or less.

3. Quantity of menstrual blood is very less (based on number of pads)

Exclusion criteria:

Patients with systemic disorders like Hypertension, Diabetes mellitus, Reported cases of Thyroid disorders, Anaemia (Hb<8g%), Patients on IUCDs and OCPs, lactating women, mental illness.

Using case proforma and necessary lab investigations; primary data of eligible patients (as per inclusion and exclusion criteria) were collected. Study was conducted in a single group and clinical symptoms of patients were assessed before intervention using scoring method which includes:

1. Inter-menstrual period
2. Duration of bleeding
3. Quantity of menstrual blood
4. Menstrual pain

ASSESSMENT PARAMETERS

Subjective Parameters

To assess the menstrual complaints before and during intervention period, a scoring system was used. It is as follows:

(A) Interval between two menstrual cycles

- 1 - 24-34 days
- 2 - 35-39 days
- 3 - 40-45 days
- 4 - Above 45 days

(B) Duration of menstrual flow

- 1 - 4-7 days
- 2 - 3 days
- 3 - 2 days
- 4 - 1 day

(C) Quantity of menstrual blood

- 1 - 4 or more than 4pads used
- 2 - 3 pads used
- 3 - 2 pads used
- 4 - 1 pad used
- 5 - Spotting bleeding without pads

(D) Pain during menstruation

- 1 - No pain
- 2 - Mild pain
- 3 - Moderate pain
- 4 - Severe pain

Objective Parameters

Relevant haematological and biochemical investigations like Hb, RBC, serum total cholesterol and serum progesterone were listed in the proforma.

Intake of diet supplement

The subjects were advised to take 5g *maashachoorana*, 5ml *tilataila* and 1g *hingu* along with breakfast for 90 consecutive days and asked to report on 30th, 60th, 90th day of intervention period for assessment of changes in subjective symptoms. Haematological parameters including Hb, RBC, serum total cholesterol and serum Progesterone were investigated before and after trial.

	<i>Tila</i>	<i>Maasha</i>	<i>Hingu</i>
<i>Rasa</i>	<i>Katu, Tikta, Madhura</i>	<i>Madhura</i>	<i>Katu, Tikta</i>
<i>Guna</i>	<i>Guru, Snigdha</i>	<i>Guru, Snigdha</i>	<i>Snigdha, Tikshna, Sara</i>
<i>Veerya</i>	<i>Ushna</i>	<i>Ushna</i>	<i>Ushna</i>
<i>Vipaka</i>	<i>Madhura, Katu</i>	<i>Madhura</i>	<i>Katu</i>
<i>Doshagnata</i>	<i>Vatahara</i>	<i>Kaphakara, Vatahara</i>	<i>Vatakaphahara, Pittakara</i>
<i>Karma</i>	<i>Artavajanaka, Rajorodhahara</i>	<i>Artavajanaka</i>	<i>Streepushpajana, Pachana</i>

STATISTICAL ANALYSIS

The results of the subjective complaints were compared before and during each month of intervention using the test 'Friedman's Test'. The results of blood investigations were compared

before and after the intervention using 'Paired t test'.

The confidence interval was fixed at 95% and the level of significance was 0.05 (5%). Then the p value was computed from these data.

Table 1: Effect of diet supplement on menstrual interval (Friedman's test)

Menstrual interval	Before trial	1 st month of trial	2 nd month of trial	3 rd month of trial
Median value	4	3	2	1
Mean value	3.63	3	2.03	1.33

Chi-square value of 71.237 and p value <0.001

Table 2: Effect of diet supplement on menstrual duration (Friedman's test)

Menstrual duration	Before trial	1 st month of trial	2 nd month of trial	3 rd month of trial
Median value	1	1	1	1
Mean value	2.85	2.65	2.33	2.17

Chi-square value of 21.592 and p value <0.001

Table 3: Effect of diet supplement on quantity of menstrual blood (Friedman's test)

Quantity of menstrual blood	Before trial	1 st month of trial	2 nd month of trial	3 rd month of trial
Median value	1	1	1	1
Mean value	2.70	2.50	2.45	2.35

Chi-square value of 10.636 and p value <0.05

Table 4: Effect of diet supplement on menstrual pain (Friedman's test)

Menstrual pain	Before trial	1 st month of trial	2 nd month of trial	3 rd month of trial
Median value	1	1	1	1
Mean value	2.67	2.53	2.40	2.40

Chi-square value of 7.765 and p value >0.05

Table 5: Effect of diet supplement on Hb percentage before and after trial (paired t test)

Hb	Mean (g%)	N	Std. Deviation	Std. Error Mean	T	p
Before trial	11.3067	30	0.94173	0.17194	-3.997	<0.001
After trial	11.5433	30	0.88617	0.16179		

Table 6: Comparison of RBC count before and after trial (paired t test)

RBC	Mean (cells/mm ³)	N	Std. Deviation	Std. Error Mean	t	p
Before trial	4.0487E6	30	0.27464	0.05014	-3.989	<0.001
After trial	4.2023E6	30	0.28928	0.05281		

Table 7: Comparison of Serum total Cholesterol level before and after trial (paired t test)

Serum total Cholesterol	Mean (mg%)	N	Std. Deviation	Std. Error Mean	t	P
Before trial	184.40	30	34.57685	6.31284	6.691	<0.001
After trial	173.77	30	29.65745	5.41468		

Table 8: Comparison of Serum Progesterone level before and after trial (paired t test)

Serum Progesterone	Mean (ng/ml)	N	Std. Deviation	Std. Error Mean	t	p
Before trial	1.9847	30	3.10216	0.56637	-2.172	<0.05
After trial	4.3537	30	4.75179	0.86755		

DISCUSSION ON ANALYSIS

1. Effect of intervention on Menstrual interval:

Result shows the effect of diet supplement on menstrual interval is statistically significant.

The drugs included in the diet supplement could correct the *agni* due to the *deepana karma*. *Ushna*, *teekshna* and *sukshma gunas* helped to penetrate *srotas* and reach the *dhatu*s. Thus properly formed *rasa* and *rakta dhatus* ensured the formation of *artava*. The *vatahara karma* of the drugs could correct the *prana vayu* and *apanavayu*. Thus the altered H-P-O axis was corrected resulting in normal inter-menstrual period.

2. Effect of intervention on Menstrual duration:

Result shows the effect of diet supplement on menstrual interval is statistically significant.

The drugs included in the diet supplement being *ushnaveerya* and *artavajanaka*, it could increase menstrual duration.

3. Effect of intervention on Quantity of menstrual blood:

Result shows the effect of diet supplement on quantity of menstrual blood is statistically significant.

All the three drugs included in the diet supplement are *pittala* and *agneya*. Along with *pittavardhaka karma*, they cause *artava utpatti* and

pravritti; thus effective in *Artavakshaya*. By the *pittavardhana* and *artavajanana karma* of the drugs, the amount of blood loss was found to be increased.

4. Effect of intervention on Menstrual pain:

Result shows effect of diet supplement on menstrual pain was statistically insignificant.

Pain or *shoola* is *vathika* in nature. The three drugs included in the diet supplement are *vata-shamaka*. But in the present study, result was not significant. It may be due to insufficient time duration of the intervention or may be due to the insufficient dosage of the drugs included in the diet supplement.

5. Effect of intervention on Haemoglobin and RBC:

Results show statistically significant change.

Tilataila and *maasha* are rich sources of iron and thus haemoglobin formation was enhanced. *Maasha* being rich in protein, greatly enabled the formation of globin part of haemoglobin.

The three drugs included in the diet supplement are *pittavardhaka* and of *agneya* nature. Their intake resulted in proper formation of *rakta dhatu*. The change was reflected in the quantity of RBC.

6. Effect of intervention on Serum Cholesterol:

Results show statistically significant change.

Taila is rich in phytoestrogen and this fact substantiates the lipid lowering observation found in this study. The mechanism of phytoestrogen lipid lowering is that of altered hepatic metabolism with augmented cholesterol removal by hepatocytes. The presence of fibres, magnesium and folate in the diet supplement inhibit the absorption of lipids in the gastrointestinal tract and thus improve cholesterol metabolism

7. Effect of intervention on Serum Progesterone:

The mean value of serum Progesterone level before trial was 1.98 with standard deviation 3.10. After trial, the mean value of serum Progesterone level was increased to 4.35 with standard deviation 4.75. The p value observed is 0.04 which is <0.05 suggesting statistically significant change.

The data shows that the combination of *tilataila*, *maasha* and *hingu* was effective in increasing the serum Progesterone level. The diet supplement by its *deepana karma*, increases the digestive fire which in turn regulates the *dhatwagni* and *bhutagni*. Thus, the overall metabolic processes of body are regulated. The *sukshmaguna* of *tilataila* and *teekshna guna* of *hingu* help to clarify the minute channels. The *srotorodha* is removed, improving the neurohormonal pathway (H-P-O axis) and finally restoring the hormonal balance. Thus progesterone level is restored to normal physiological level.

CONCLUSION

The diet supplement was highly effective in normalising menstrual interval, menstrual duration and quantity of blood loss. The three drugs included in the diet supplement are mainly *Vatashamaka* and *Pittavardhaka*. They could

correct the *agni*, ensure proper *rasa* and *rakta dhatu* formation which resulted in normal *artavautpatti*.

By the *vatashamana* action of the drugs included in the diet supplement, the menstrual interval was found to be corrected. The *vatahara karma* of the drugs could correct the *prana vayu* and *apanavayu*. The *ushna veerya* of *tilataila*, *maasha* and *hingu* have increased the amount of *artava* and thus increased menstrual duration. *Artavajanana* property of *tilataila*, *maasha* and *hingu* have increased the *utpatti* and *pravritti* of *artava*, thus increasing the quantity of menstrual blood.

Tilataila and *maasha* being rich sources of iron enable proper formation of haemoglobin and thus increased haemoglobin concentration and RBC. The presence of fibres, magnesium and folate in the diet supplement inhibit the absorption of lipids in the gastrointestinal tract and thus improve cholesterol metabolism. Thus it was effective in reducing serum cholesterol level.

The diet supplement by its *deepana karma*, increases the digestive fire which in turn regulates the *dhatwagni* and *bhutagni*. Thus the overall metabolic processes of body are regulated. The *sukshmaguna* of *tilataila* and *teekshna guna* of *hingu* remove *srotorodha*, improving the neurohormonal pathway and finally restoring the hormonal balance. Thus progesterone level was restored to normal physiological level.

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