

## EFFECT OF SAPTACHAKRA CHOORNA IN THE MANAGEMENT OF SANTARPANOTTHA PRAMEHA

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### ABSTRACT

Type 2 Diabetes Mellitus is one of the most prevalent diseases of the current era. It is a clinical syndrome characterized by hyperglycemia due to absolute or relative deficiency of insulin. It is estimated that in the year 2000, 171 million people were having Diabetes Mellitus and is expected to double by 2030<sup>1</sup>. The present study was designed with the objective to evaluate the efficacy of *Saptachakra choorna* in the management of *Santarpanottha prameha* (Diabetes Mellitus). Since Insulin resistance is closely associated with manifestation of obesity, to fulfill the objective 31 patients of *Santarpanottha prameha* with Body Mass Index above 25 were selected for the study. The patients were administered *Saptachakra choorna* 6 g.m. two times a day, before breakfast and dinner with luke warm water for 45 days. The intervention has shown Statistically highly significant reduction in Fasting Blood Sugar, Post Prandial Blood Sugar and Urine Sugar parameters. The study also provided Statistically highly significant results in the reduction of *Prabhoota mootrata* and *Pipasa* along with Significant effect on *Klama*.

**Key words:** *Santarpanottha prameha*, Type 2 Diabetes Mellitus, *Saptachakra choorna*.

### INTRODUCTION

Type 2 Diabetes Mellitus (D.M) is principally a disease of the middle aged and elderly. Diabetes Mellitus affects 5-6 % of the global adult population. Several factors contribute to the global pandemic type 2 diabetes which mainly involves obesity, sedentary life style, increasing urbanisation and unsatisfactory diet. *Santarpanottha prameha* described in Ayurvedic classical literature is characterized by *mootra* (urine) which is '*madhura, picchila, madhoopama*'.<sup>2</sup> These clinical features have similarity with Type 2 non insulin dependant diabetes mellitus in terms of etiology, pathology and clinical presentation. Eventhough *prameha* is a *tridoshajanya vyadhi*, *santarpanottha prameha* is particularly characterized by the

vitiation of *kapha* and *pitta dosha* and involvement *medodhatu* as well as *kleda*. Thus increase of *Prthvi* and *Ap Mahabhoota* can be observed predominantly in *Santarpanottha Prameha*. As per *samanya- visesha sidhantha*, the *vrddhi* or *kshaya* of *gunas* of one *mahabhoota* can be brought back to normalcy with the use of *mahabhoota* having opposite *gunas*. *Saptachakra* is a drug having *agni, vayu* and *akasa mahabhoota* predominance.<sup>3</sup> So *saptachakra choorna* will be helpful to break the *samprapti* of *santarpanottha prameha*.

### AIMS AND OBJECTIVES

The present research was aimed to assess the antihyperglycemic effect of *Saptachakra choorna* in newly detected as well as chronic cases of *Santarpanottha prameha*.

## MATERIALS AND METHODS

For clinical study a total of 31 patients fulfilling the diagnostic criteria of *Santarpanoththa Prameha* with respect to age, irrespective of sex, caste, religion & socio-economic status approaching the outpatient and inpatient department of Government Ayurveda Medical College and Hospital, Mysore were selected for the study. They were assigned into a single group taking into consideration the inclusion and exclusion criteria for the interventional study

### Inclusion Criteria:

Patients of *Santarpanoththa Prameha* (NIDDM) of either sex between the age group 30-70 years with following signs and symptoms : *Prabhoota mootrata*, *Avila mootrata* , Fasting blood glucose in between 126mg/dL - 220mg/dL, Post prandial blood glucose in between 200 mg/dL - 300 mg/dL and patients with Body mass index 25 were selected for the study.

### Exclusion Criteria:

Patients of *sahaja prameha* (Type 1 Diabetes) , Patients of *Madhumeha* suffering from *bala kshaya* and *dhatu kshaya* (IDDM) Patients with other systemic ailments which interfere with study such as Congestive cardiac failure(CCF), any renal impairment like nephropathy, Tuberculosis were also excluded from the study . Pregnant and lactating women were also excluded from the study.

### Laboratory Investigation

Routine Urine examination with Urine Sugar and Urine Specific gravity and biochemical examination (Fasting blood sugar (F.B.S) and Post-prandial blood sugar(P.P.B.S) ) were performed.

### Ethical Approval

The research design was approved by the ethical committee, G.A.M.C, Mysore.

### INTERVENTION:

#### Drug, dose and duration:

**Drug:** *Saptachakra choorna*. (Medicine is given before food with luke warm water. )

**Dose:** 6 gm b.i.d.

**Duration:** duration of intervention was 45 days.

The patients were advised to follow *Pathya-Apathya* as per Ayurvedic classics,

*Pathya:*Yava, green gram,pomegranate, Bengal gram, bitter gourd, drum sticks, *methi*, bottle gourd, moong dal etc.

*Apathya:* Milk and milk products, bakery products, fermented foods, oily fried foods, potatoes, sugar etc. Patients were advised to avoid *diwa swapna*( sleeping during day time ) .

Exercise: 20 minutes exercise was advised.

### CRITERIA FOR ASSESSMENT OF OVERALL EFFECT OF THERAPY:

The overall effect was assessed was assessed on the basis of relief in signs and symptoms of *Santarpanoththa Prameha*, improvement on 4 point scoring pattern assessment scale, decrease in FBS PPBS and Urine sugar levels and changes in Urine specific gravity.

#### Statistical Analysis

Statistical Analysis of the data was done using descriptive statistics, frequencies, cross tabulations, Chi- Square test , and contingency table analysis using SPSS (Statistical presentation system software) for windows (version 18.0).

### Follow-up

Patients were advised to visit the hospital once in two weeks during the intervention and 45 days after the intervention as follow-up.

## OBSERVATIONS AND RESULTS

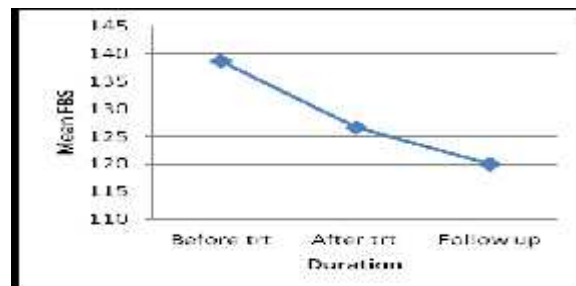
31 patients had completed the intervention. Among them the maximum no. of patients i.e.9( 29.0%) were from the age groups of 41-50 and 51 to 60 years each. Out of 31, 20(64.5%) patients were male and all patients under intervention were married. 18( 58.10% ) patients in the current study were following a vegetarian diet pattern. 20(64.5% ) patients were having *Madhura Rasa bhakti* while 10(32.3% ) patients were having *Lavana Rasa Bhakti*.18(58.1%) patients were having habit of indulging in sleep at day time. 23(74.2 %) patients were having mild exertionous life pattern while 4(12.9%) patients were having sedentary life pattern. All the patients had BMI between 25-30.Maximum chronicity observed was in the range 6-10 years ie. 12(38.7%) patients. Maximum no. of patients i.e. 13( 41.9%) were having *Vata – Kaphaja Prakrti* .

Out of 31 patients 15 patients (48.4%) were complaining of *Prabhoota mootrata* at day time, all the 31 (100%) patients were complaining of *Prabhoota mootrata* at night time, 28 (90.32%) patients were having complaints of *Avila Mootrata* on observation, 28(90.32%) patients were having complaints of *Pipasa*, 6(19.35%) patients were having complaints of *Kara Pada tala Daha*, only 1(3.2%) patient was having complaint of *Kara Pada tala Supti*, 24 (77.4%) patients were having complaints of *Klama*,9(29.03%) patients were having *Kshudhadhikyata* and 28(90.32%) patients were complaining of *atisweda*.

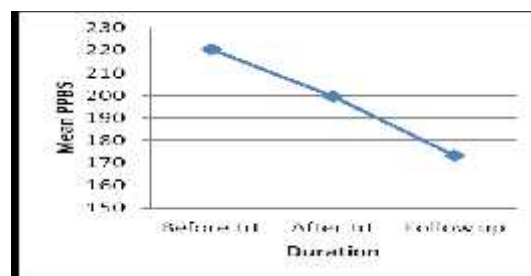
The mean FBS and PPBS values before the commencement of intervention were 138.68 and 220.39 respectively . The mean Urine Sugar level value before intervention was .0052 and mean Urine Specific Gravity value before intervention was 1.016.

Intervention has shown a Statistically highly significant decrease in FBS by 8.5% after intervention and reduced by 15.53% on follow-up.( Graph-1) PPBS levels got reduced by 9.5% after intervention and relieved by 21.3 % on follow-up.( Graph-2) The mean Urine Sugar level value before intervention was .0052.It was relieved by 55.77 % after intervention and reduced to .0023 and relieved by 75 % on follow-up. The mean value on follow-up was .0013. The results were Statistically highly significant. The mean Urine Specific Gravity value before intervention was 1.016.It was unchanged after intervention and relieved by 0.09 % on follow-up. The mean Urine Specific Gravity value on follow-up was 1.015. The results were Statistically insignificant .

**Graph: 1: Effect of Saptachakrachoorna on mean FBS levels**



**Graph 2: Effect of Saptachakra choorna on mean PPBS levels.**



There was statistically highly significant reduction of 22.1% after intervention and 43.4% on follow-up in *prabhoota mootrata* at night time ( $p < 0.001$ ) . Statistically highly significant. ( $p < 0.001$ ) reduction

of 29 % and 53% was observed in *pipasa* after intervention and on follow-up . In *Klama*, a relief of 45.65% and 48.9 % was observed after intervention and on follow-up respectively which was statistically significant.

A statistically insignificant relief of 51.9% and 59.9% was observed in *Prabhoota Mootrata* at day time. In *avila mootrata*, A statistically insignificant relief of 4.9% and 35 % was observed. A statistically insignificant relief of 18.75% and 60.41 % was observed in *Khudhaadhikyata* . In *karapadataala daha* , a statistically insignificant relief of 12.5% and 18.75 % was

observed. Only one patient registered for the study was complaining of *kara Pada tala suptata*. The mean score of *kara pada tala suptata* remained the same after treatment and on follow-up. A statistically insignificant relief of 12.12% and 19.7 % was observed in *swedapravrthti* . *Saptachakra choorna* produced statistically highly significant reduction of the mean total score. The mean total score before treatment was 10.32. It was reduced to 7.71 after treatment and further reduced to 5.90 on follow-up. (p<0.001) (Table-1)

**Table 1: Showing effect of Saptachakra choorna on assessment criteria**

Complaint	Mean Value			% OF RELIEF		P VALUE
	BT	AT	FU	AT	FU	
<i>Prabhoota mootrata</i> at day time	0.806	0.387	0.323	51.9 %	59.9 %	.199
<i>Prabhoota mootrata</i> at night time	2.03	1.58	1.03	22.1%	43.4%	<b>.000</b>
<i>Avila Mootrata</i>	1.22	1.16	0.87	4.9%	35%	.201
<i>Pipasa</i>	2	1.42	0.94	29%	53%	<b>.000</b>
<i>KaraPadatala Daha</i>	0.48	0.42	0.39	12.5%	18.75 %	.955
<i>Kara Pada tala Supti</i>	0.03	0.03	0.03	-	-	1.00
<i>Swedapravrthti</i>	1.32	1.16	1.06	12.12%	19.7%	.714
<i>Klama</i>	1.84	1	0.94	45.65%	48.9%	<b>.023</b>
<i>Kshudhadhikyata</i>	0.48	0.39	0.19	18.75%	60.41%	.627

## DISCUSSION

*Santarpanottha prameha* and *prameha* in general is characterized by the predominant clinical feature of *prabhoota mootrata*. It is caused by an excess of vitiated *kleda* which gets converted into *mootra*. The pathogenesis of *santarpanottha prameha* can be evaluated based on the *Panchabhoutika* involvement as follows,

When *Ap* and *Prthvi Mahabhoota* predominant etiological factors are used constantly it results in the vitiation of *Kapha dosha* . This results in *kleda vrddhi* and *Sro-*

*torodha*. *Mamsa dhatu* is *Prthvi* and *Ap Mahabhoota* predominant. As a consequence of increase in *Kleda* the compactness of *mamsa dhatu* gets decreased making it flaccid.

*Medo dhatu* is *Ap* and *Prthvi Mahabhoota* predominant. When *medo dhatu* gets vitiated it results in increase in *snigdhatu* of body. Vitiation of *medodhatu* causes both qualitative as well as quantitative changes resulting in formation of *bahu abaddha meda*. *Medo dhatu* , which is produced in excess quantity is *aparipakva*( improperly metabolized ) in nature. This causes derangement in body producing

*saithilya*. Along with *Vrdha Kapha*, *Meda* obstructs the path of *Vayu* resulting in its aggravation. This aggravated *Vata* results in increase of *Agni*. This enforces the person to eat more and more food. But since *Agni* is improper it paves way to production of *Aparipakva meda* only<sup>4</sup>

Proper balance of *Kleda* in the body is maintained by *Mootra* as well as *Sweda*. Increase of *Apya guna* ie. *drava* and *Sandra guna*, in *Meda* causes increase in *Kleda*. When *Kleda* part gets vitiated it affects the normal physiology of *mootra* and *sweda* and results in *saithilya* of body. Since increased *Kleda* is excreted as *mootra*, *kleda vrdhhi* will manifest as *prabhoota mootrata*. Thus the excessive production of *sareera kleda* leads to the manifestation of *avila mootrata* and *shithilangata*. *Sweda* is having *Ap Mahabhoota* predominance. When *kleda* part is increased in body it is eliminated in the form of either *sweda* or *mootra*. Since *Parthiva* part is also dispersed in *Kleda*, *visra guna* also gets increased. As a result of this, symptoms like excessive sweating and bad body odour can be observed in the person.

The pathogenesis and clinical features of *Santarpanoththa prameha* resembles clinical manifestation of insulin resistance. Insulin resistance is a physiological condition in which cells fail to respond to the normal actions of insulin, leading to hyperglycemia. Beta cells in the pancreas subsequently increase, production of insulin, further contributing to hyperinsulinemia. Insulin resistance is closely associated with cluster of conditions such as obesity, hypertension and hyperlipidaemia which is collectively known as Metabolic syndrome or Syndrome X. Metabolic syndrome is considered to be a risk factor for

cardiovascular diseases and leads to an abnormal function and pattern of body fat..

Pathogenesis of Metabolic syndrome can be understood based on the *samprapti* of *Santarpanoththa Prameha* particularly by observing vitiation of *Kapha dosha* as well as *Medo dhatu*.

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## PROBABLE MODE OF ACTION OF THE DRUG

*Saptachakra* (*Salacia reticulata* Wight) is having *Kashaya* and *Tikta Rasa* ie. the drug is having *Vayu, Agni and Akasa Mahabhoota* predominance. It is having *Laghu* (*Agni+Vayu+ Akasa*), *Rooksha* (*Vayu+Agni*) and *Teekshna* (*Agni*) qualities. It is *Ushna* (*Agni Mahabhoota*) in *Veerya* and *Katu* in *vipaka* (*Agni+Vayu+Akasa Mahabhoota*). The drug is having *Pachana* and *Soshana* activities. The transformation factor in the body, *Agni* is hampered in *Santarpanoththa Prameha*. It is the Sole factor which can convert *Prthvi* and *Ap Mahabhoota* into *Akasa* and *Vayu* and vice-versa. Impairment of *Agni* results in *Dhatugata Ama* and thereby reducing nourishment of *Dhatu*. The *Agni Mahabhoota* component of *Saptachakra choorna* helps in *Pachana* as well as in converting the excess *kleda* to establish normal physiology.

It also helps in attaining normal patency in *srotas* and attaining normal movement of *Vayu*. *Tikta* and *Kashaya rasa* are characterized by *kleda upasoshana* as well as *'shareera kledasya upayokta*. These attributes help in reducing the increased *kleda* component of body. This also helps in alleviating the *dosha visesha* ie. *bahudrava sleshma* also.

Aqueous extract of *S. reticulata* stems administered to normal mice resulted



in reduced obesity, thus potentially could reduce the risk of associated diseases including type II diabetes.<sup>5</sup> Kajimoto et al. (2000) reported a double-blind placebo-controlled study performed in Japan. It resulted in significantly decreased blood sugar levels in humans with mild type II Diabetes, receiving *S. reticulata* extract as part of their diet, as compared to control.<sup>6</sup> Mangiferin, one of the main components in *Salacia* species, has been reported to be a potent  $\alpha$ -glucosidase inhibitor that has been shown to inhibit increases in serum glucose levels<sup>7</sup>.

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## CONCLUSION

The treatment regime explained for *Santarpanottha prameha* can be a worth for the management of Type 2 D.M. associated with obesity. *Saptachakra Choorna* provided Statistically highly significant results in the reduction of *Prabhoota mootrata* and *Pipasa*. Statistically significant result was found in *Klama* as well. Statistically highly significant result was obtained in the total assessment of patients. Statistically highly significant result was observed in FBS, PPBS and Urine Sugar levels. Thus the *Pramehaghna* property of Ayurvedic drugs provides good glycaemic control when supported by proper *pathya* mentioned in Ayurvedic classical literatures.

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