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Research Article

A VERIFICATION STUDY ON R.N.CHOPRA FINDINGS OF GYMNEMA SYLVESTRE TO REDUCE BLOOD SUGAR LEVELS IN TYPE 2 DIABETES MELLITUS CASES

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ABSTRACT

Diabetes Mellitus is metabolic disorder characterized by excessive glucose in blood circulation mainly resulting from inadequate insulin secretion, insulin action or both and insulin resistance. Gymnema sylvestre have reported beneficial effect for treating in type 2 diabetes mellitus. **Objective:** Effectiveness of homoeopathic medicine gymnema sylvestre in type 2 diabetes mellitus. **Material and method:** 60 cases of type 2 diabetes mellitus were selected and gymnema sylvestre was prescribed for these cases and follow up was every one month, three months, six months and nine months. **Results:** Over a period of nine months, there was significant reduction in blood sugar levels (fasting and post prandial blood sugar) in test group compared to controlled group. ANOVA repeated measures also showed significant difference P = 0.001. **Conclusion:** There is significant reduction in fasting blood sugar, post prandial blood sugar levels of test group (Gymnema sylvestre) compared to control group (Placebo) in type 2 diabetes mellitus cases.

INTRODUCTION

Gymnema Sylvestre is available throughout the India. This plant homoeopathic tincture is made from the leaves. Gymnema Sylvestre homoeopathic medicine has been reported by *Dr. Lt. Col. R.N.Chopra* (First Prover) in India and also proving done in India. It used treated in diabetes, poisonous snake bites and wound healing.

Diabetes mellitus is a syndrome with disordered metabolism and inappropriate hyperglycemia due to either a deficiency of insulin secretion or to a combination of insulin resistance and inadequate insulin secretion to compensate. Type 2 diabetes mellitus group comprising milder forms of diabetes that occur predominantly in adults but occasionally in juveniles. More than 75% of Indian people are under this classification. India is second higher people suffering with this disease in the global[1]. In United Kingdom, Sri Lank, Bangladesh, United States of America, Australia and golf countries have been found to much higher prevalence of diabetes than the native populations of the respective countries[2-4]. Premature coronary heart disease is due to excessive fat in intra abdominal region and insulin resistance[5]. Tissue insensitivity of insulin has been noted in most type 2 diabetes mellitus patients irrespective of weight and has been attributed to several interrelated factors. These include a putative genetic factor, which is aggravated in time by additional enhancers of insulin resistance such as aging, a sedentary life style and abdominal visceral obesity and deficiency in the response of pancreatic B cells to glucose. Hyperglycemia due to resistance to insulin and impaired B cell response to glucose appear. Epidemiologic data indicate strong genetic influences, since in monozygotic twins over 40 years of age, concordance develops in over 70% of cases within a year whenever one twin develops type 2 diabetes mellitus. 60 – 70% obesity patients of North Americans, Europeans or Africans are suffering with type 2 diabetes, 30% cases are from Chinese and japans patients' suffering with type 2 diabetes mellitus. 7 studies had been published detailing the prevalence of the diabetes by the end of the 1960s [6-11]. Migrant Asian Indian more prone to get type 2 diabetes mellitus and metabolic syndrome [12]in various parts of the global such as Fiji, United Kingdom and mauritius[3,4,13-19]. This Indian people have more fasting insulin levels compared to the white people[21,22]. Diabetes increased due to junk food and over eats of sweets in Indian school children [23-25].

Clinical Features

Type 2 diabetes mellitus clinical features are Polyuria, thirst, weakness or fatigue, polyphagia with weight loss, recurrent blurred vision, vulvovaginitis or pruritus, peripheral neuropathy, nocturnal enuresis. Mild hypertension is often present in obese diabetics. Eruptive xanthomas on the flexor surface of the limbs and on the buttocks and lipemia retinalis

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due to hyeprchylomicronemia can occur in patients with uncontrolled type 2 diabetes mellitus who have a familial form of hypertriglyceridemia.

Investigations

Urinalysis (glucosuria, ketonuria), blood testes (glucosetolerance test, glycoslated hemoglobin, fasting and post pandal) and lipoprotein abnormalities (LDL, HDL, cholesterol) in diabetes.

Complications of Diabetes

In microvascular complications are diabetic cataracts, diabetic retinopathy[26,27], glaucoma, diabetic Neuropathy include microalbuminuria, progressive diabetic nephropathy[28-30](Indian people have less rates compared to the white individuals[31]), gangrene of the feet, diabetic neuropathy include with peripheral neuropathy (distal symmetric polyneuropathy, isolated peripheral neuropathy, painful diabetic neuropathy), autonomic neuropathy (management of autonomic neuropathy, management of erectile dysfunction), skin and mucous membrane complications. In macrovascular complications are coronary artery disease[32] and peripheral vascular disease. The coronary artery disease also higher in Indian people compared to the western countries[33]. Peripheral vascular disease is rare in Indian patients compared to USA and UK [34,35]. More than 25% of Indian peoples suffer with diabetic foot ulcer during their life time[36]and 8% of Tuberculosis[37]. The Research trials showed that type 2 diabetes mellitus can be prevented in peoples at high risk of developing the disease using lifestyle modification, drugs or a combination of the two[38-41].

Gymnema Sylvestre is excellent medicine for diabetes mellitus also effacious in poisonous snake bites, urinary profuse loaded with sugar. After passage of wine patient exlamins, this passing of urine in large quantity has made me very weak. Urine colour is white copious and specific gravit[42]. Gymnema sylvestre is used for albuminurea, sleeplessness, debility and diabetes insipidus. Absent mind, depression, morose, anxious, unable to moody, face is pale, itching eruption on the face with burning sensation, furuncles of the face, hungry feeling of the stomach with drinks large quantities of cold water at a time yet dryness persists, dry, great thirst and clean tongue, weakness of sexual power. It is also efficacious in poisonous snake bites [43]. Traditional plants oral therapy World Health organization has recommended that effective work on diabetes mellitus without side effects[44]. Several reviews showed that medical plants had antidiabetic activities[45,46].

MATERIAL AND METHODS

Period of Study

The study was conducted on the cases available from March 2018 to December 2018.

Sample Size

The sample consisted of 60 cases of type 2 diabetes mellitus visited to department of practice of medicine Out Patient Department (O.P.D) and peripheral centers of Sri Ganganagar Homoeopathic Medical College, Hospital and Research center, Sri Ganganagar, Rajasthan, India during the specified period.

Type of Study

This was verification study on *Dr. Lt. Col. R.N. Chopra* findings of *Gymnema sylvestre* in type 2 diabetes mellitus patients with three months, six months and nine months follow up and comparison before, after with *gymnema sylvestre* homoeopathic mother tincture.

Inclusion Criteria

- Both sexes and aged between 30 to 65 years.
- Cases of type 2 diabetes mellitus complaints.
- Blood glucose levels less than 9 mmol/L in fasting blood sugar, less than 11 mmol/L in post prandial blood sugar.
- Cases of type 2 diabetes mellitus where gymnema sylvestre is indicated and prescribed the same in mother tincture.

Exclusion Criteria

- Patients who were on homoeopathic medicines other than gymnema sylvestre mother tincture.
- Taking medicines for diabetes mellitus complications.
- Allergic to herbal medicines.
- Chronic complications of type 2 diabetes mellitus.
- Pregnancy.

Method

60 patients (Control group 30 patients and test group 30 patients) were enrolled by simple non random method. Diagnoses of the cases were made based on relevant clinical history and laboratory values obtained during the first visit according to current medical diagnosis and treatment guidelines[47]. Thirty potency of *gymnema sylvestre* was prescribed for the above cases and was followed for a period of three months, six months and nine months. Each selected case was recorded on the standardized case record with a special attachment evolved particularly for this study. Diet and exercise were given instruction clearly for minimum 30days to selected patients. Approximately 60% carbohydrates, 20% proteins and 20% fats were allowed during study period.

Remedy Used

Mother tincture of homoeopathic remedy *Gymnema sylvestre* brought from homoeopathy pharmacy, Sri Ganganagar, Rajasthan, India. 200 µl/kg body weight *gymnema sylvestre* mother tincture was given twice daily for a period of study. Follow up was watched and analyzed as per criteria set up in each case according to standard guideline of homoeopathy using the symptomatology of the patient.

Follow up and Symptomatic Assessment

Each follow up was taken on special follow up sheet of examination findings e.g. blood pressure, weight, investigations, diet and exercise. Each case was evaluated by the homoeopathic physician, dietician, general physician and pathologist. Baseline investigations done in each case were fasting and post prandial blood sugar, glycosylated haemoglobin, urine examination, serum creatinine, lipid profile, electrocardiogram, ultra sound abdomen and ophthalmic check up. Each follow up was one month, three months, six months, nine months and assessed according to the guidelines given in standardized case record follow up sheet. A

diabetes complaint was graded according to the intensity, aggravation, presence and absence. Blood glucose values of each patient were estimated again, minimum twice, which after one month, three months, six months and nine months.

Statistical Analysis

The collected data was analyzed by mean, standard deviation, P value and ANOVA

Research Hypothesis

There is a significant decrease in blood sugar levels in type 2 diabetes mellitus before and after homoeopathic treatment with *gymnema sylvestre*.

Null Hypothesis

There is no significant decrease in blood sugar levels in type 2 diabetes mellitus before and after homoeopathic treatment with *gymnema sylvestre*.

RESULTS

Among 60 type 2 diabetes mellitus patients with mean ± SD, maximum cases were observed in age group of 30-40 years in 18 (30%) cases, 40-50 years in 19 (31.66%) cases, 50-60 years of age group had 21 (35%) cases, 60 – 65 years in 2(3.33%) (Table 1 – A) and patients were in the male 33(55.00%) and 27 (45.00%) patients were females out of 60 cases. In verification research *Gymnema sylvestre* mother tincture was prescribed to the patients according to the totality of symptoms and similarity. The observations were made *Gymnema sylvestre* is the most effective medicine for the verification study.

The study of 60 patients showed a ration of male to female subjects was 30 and 30 (Table 1- B). Baseline data for control group and test groups (*Gymnema sylvestre*) were analyzed on a subject wise basis which has been shown in Mean ± Standard deviation (SD) baseline control group, Fasting Blood Sugar was 8.42± 0.28, *Gymnema sylvestre* group base line was 8.45± 0.30. P value showed that 0.5582. After 3 months in the control group base line was 8.27± 0.24 and *Gymnema sylvestre* group base line was 7.43± 0.36, P value showed after three months duration of the study was 0.0001.After six month duration in the control group base line was 8.15± 0.21 and *Gymnema sylvestre* group was 6.54 ± 0.21. P value showed after six months was 0.0001. After nine months in the control group base line was 8.03±0.14 and *Gymnema sylvestre* group was 5.30±0.26, P value showed that 0.0001 (Table 2). 60 diagnosed cases of diabetes were studied for a period of 3, 6 months and nine months, fasting blood sugar and post prandial blood sugar levels were checked in every 3 month, 6 months and 9 months (before, during and after the treatment) in mmol/L.

The following observation was made in Mean ± SD baseline control group, post prandial blood sugar was10.56± 0.28 *Gymnema sylvestre* group base line was 10.65± 0.35, P value showed that 0.2713. After 3months in the control group base line was 10.16± 0.33 and *Gymnema sylvestre* group base line was 9.69 ± 0.54, P value showed after three months duration the study 0.0001. After six months duration in the control group base line was 9.56 ± 0.45 and *Gymnema sylvestre* group was 8.64 ± 0.48, P value showed after six months was 0.0001. After nine months in the control group base line was 9.37±0.40 and *Gymnema sylvestre* group was 7.76±0.48, P value showed after nine months was 0.0001 (Table 2). Repeated measures ANOVA was performed comparing data obtained at baseline, at three months, six months and nine months, which also revealed significant difference between the two groups, control group in fasting blood sugar was F= 14.592 and *Gymnema sylvestre* group fasting blood sugar F= 599.019; fasting blood sugar of control and *Gymnema sylvestre* P value was 0.0001 and control group of post prandial blood sugar was F value 79.441 and *Gymnema sylvestre* group post prandial blood sugar F= 217.472; Post Prandial blood sugar and *Gymnema sylvestre* P value was 0.0001.Which denotes a significant reduction in all the clinical parameters which includes Fasting blood sugar and post prandial blood sugar at baseline, three months, six months and nine months after homoeopathic administration with *Gymnema sylvestre* mother tincture in type 2 diabetes mellitus (Table 2).

Table 1 Baseline Characteristics

(A) Distribution of cases according to gender

Gender	No. of Cases	Percentage (%)
30-40	18	30.00
40-50	19	31.66
50-60	21	35.00
60-65	2	3.33
Total	60	100

(B)Distributions of cases according to age group

Age Group	No. of Cases	Percentage (%)
Male	33	56.66
Female	27	43.33
Total	60	100

(C) Distributions of cases according to Blood Glucose Levels

Blood Glucose	No. of Cases	Percentage (%)
FBS	30	50.00
PPBS	30	50.00
Total	60	100

F.B.S: Fasting Blood Sugar; PPBS: Post Prandial Blood Sugar

Table 2 Blood Sugar (mmol/L) changes in the two groups over different points in time

Groups	Baseline	3 Months	6 Months	9 Months	F value[¥]	P value[¥]
			Fasting Blood Sugar (FBS)[*]			
Control (n=30)	8.42 ± 0.28	8.27 ± 0.24	8.15 ± 0.21	8.03 ± 0.14	14.592	<0.00001
Gymnema sylvestre (n=30)	8.45 ± 0.30	7.43 ± 0.36	6.54 ± 0.21	5.30 ± 0.26	599.019	<0.00001
P Value	0.5582	0.0001	0.0001	0.0001		
			Post Prandial Blood Sugar (PPBS)[*]			
Control (n=30)	10.56 ± 0.28	10.16 ± 0.33	9.56 ± 0.45	9.37 ±0.40	79.441	<0.00001
Gymnema sylvestre (n=30)	10.65 ± 0.35	9.69 ± 0.54	8.64 ± 0.48	7.76±0.48	217.472	<0.00001
P Value	0.2713	0.0001	0.0001	0.0001		

[¥]Repeated measures ANOVA was carried out with time as factor versus group for showing difference between the groups, [*]Independent t test was carried out for showing the difference between the groups at each time point. i.e. at 3 months, 6 months and 9 months.

DISCUSSION

Out of 60 type 2 diabetes mellitus patients with mean ± SD, maximum cases were observed in age group of 30-40 years in 18 (30%) cases, 40-50 years in 19 (31.66%) cases, 50-60 years

of age group had 21 (35.00%) cases and 60-65 years in 2(3.33%) (Table 1 – A) and patients were in the male 17(55.00%) and 13 (45.00%) patients were females out of 60 cases. In verification research *Gymnema sylvestre* mother tincture was prescribed to the patients according to the totality of symptoms and similarity. The observations were made *Gymnema sylvestre* mother tincture is the most effective medicine for the verification study

It was observed that there was a significant reduction in Fasting Blood Sugar (FBS) and Post Prandial Blood Sugar (PPBS) values in base line, three months, six months and nine months of *Gymnema sylvestre*. Up to now *Gymnema sylvestre* has not been used widely in maintenance patients with type 2 diabetes mellitus. In this verification study we examined a dentifrice form containing *Gymnema sylvestre* homoeopathy drug to evaluate its effects on type 2 diabetes mellitus. The results of this verification study suggest that the homoeopathy *Gymnema sylvestre* is sufficiently safe and effective in the treatment of diabetes mellitus (type two) as compared to the placebo group. This study demonstrates a significant reduction in the mean of Fasting Blood Sugar (FBS) and Post Prandial Blood Sugar (PPBS) of *Gymnema* when comparing results of control group.

The diabetes mellitus cause serious complications to human body. It leads to acute complications (micorvascular) as well as chronic complications (macrovascular). Therefore, it is suggested that more studies must be designed to find out the exact antidiabetic effects of *Gymnema sylvestre* on type 2 diabetes mellitus. The reviews concluded positive outcome in controlling in diabetes mellitus (type two) with allopathic drugs (antidiabetic). But Homoeopathic medicine *Gymnema sylvestre* was not prescribed in none of the experimental, observation studies and constituent studies except *Dr .R. N. Chopra*.

CONCLUSION

The research showed that significant reduction in blood glucose levels with *gymnema sylvestre*. *Gymnema sylvestre* plays an important role in the treatment of type 2 diabetes mellitus. There was no side effective during the treatment and it can be concluded that homoeopathic *Gymnema sylvestre* can be help the diabetic (type 2) patients to take a new lease on life (*Dr. R. N. Chopra* findings).

During the study it was observed that in almost all the cases the homoeopathic medicine *gymnema sylvestre* responded well. There is a significant reduction in fasting blood sugar, post prandial blood sugar levels in test group with *gymnema sylvestre*. Thus, we can conclude that *gymnema sylvestre* mother tincture used with holistic approach is very effective in treating the cases of type 2 diabetes mellitus.

Limitations

Duration was nine months only.

Financial Support and Sponsorship

Nil.

Conflict of Interest

None declared.

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