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A study of therapeutic action of jambul vinegar in the patient of diabetes mellitus

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Abstract

Diabetes mellitus is a chronic metabolic disorder resulting from a defect in insulin secretion. The main indication of diabetes mellitus a hyperglycemia in blood which is due to low insulin directed fostering of glucose by target cells. It is a silent killer and one of the most challenging symptom in 21st century. In 2000, India (31.7) topped the world with the highest number of people with the united states (17.7million) in second and third place respectively. Study shows that there was globally 285 million people suffering from this disease in 2010. The prevalence of diabetes is predicted to double from 171 million in 2000 to 366 million in 2030 with a maximum increase in India (Wild et al, 2004).

In people with DIABETES, blood sugar levels remain high, this may be due to insulin is not produced in sufficient amount. Various herbal drugs have also proved effective due to their benefits in diabetes. The study focus on the use of Jambul Vinegar for the treatment of diabetes.

Keywords: insulin, blood sugar level, fasting, post prandial, jambul vinegar

Introduction

In humans, insulin deficiency and insulin resistance are common but serious pathological conditions. The constellation of anomalies caused by these two conditions is called Diabetes Mellitus. Broadly it can be divided into 2 types, that is diabetes Type 1 (or Insulin dependent Diabetes mellitus, IDDM) and Diabetes type 2 (or Non-Insulin Dependent Diabetes mellitus, NIDDM). The former is due to defect in Pancreas causing lack of Insulin synthesis and secretion while latter is due to resistance of Insulin to all body cells that is inability of Insulin entry in to the cells. Resistance to insulin stimulated glucose uptake is a common phenomenon and plays a central role in the pathogenesis and clinical course from predicaments to Diabetes Mellitus. Higher Insulin in the face of normal or elevated plasma glucose is the typical manifestation of Insulin resistance. In population studies; obesity, diabetes, hypertension and dyslipidemia overlap to a significant degree, often in multiple combinations. In recent years, the view has gained ground that resistance to insulin stimulated glucose uptake plays a fundamental role in a number of maladaptive complexes. These facts have led medical scientist J.M. Revan to hypothesize an entity called syndrome-X, the components of which include Insulin resistance, obesity, glucose intolerance, hyperinsulinemia, hypertension, VLDL and decreased HDL. According to a WHO report of the year, in 2010, 285 million people (6.6% of the global population in the age group 20-79) were found to be diabetic. However, by 2030, an estimated 435 million people are expected to suffer from this disease - 7.8% of the adult population.

Diagnostic criteria of blood sugar level recommended by who and world diabetes association

I. Normal Range of Blood sugar Levels

- Fasting (F): (8 to 12 hours after meals,) 75-115 mg/dl
- Past Prandial (PP): (Within 2 hrs after meal) > 140 mg/dl
- Random (R): (Anytime between the three meals) >150 mg/dl

II. Diabetic range of Blood Sugar Levels

- Fasting (F): ≥ 180 mg/dl
- Past Prandial (PP): ≥ 200 mg/dl
- Random (R): ≥ 200 mg/dl

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III. Normal Range of Urine Sugar Levels

Glucose = 50-300 mg/ 24 hrs.

IV. Prediabetes/ Borderline =

Persistent 180 mg/dl

Methodology of study

In this study, only 10 cases were selected. Data collected from the Control group. It was found that values of P.P. Blood Glucose Levels in the subjects consuming Vinegar for 30 days was decreased up to a certain level while in few cases it dips down to normal. Conclusion was made after comparing their records with initial values to find out the difference.

Observations of Selected Cases

1) Case

Age : 47 yrs.

Education : Graduate

Occupation : Service

Economic Status: Middle-income group

Weight : 72 kg

Height : 5 feet 5 inch

- When the disease was diagnosed?

February 2008 (Type-2)

- Any treatment or medications since them?

Oral drug taken by patient - metformin

- Average post prandial blood sugar levels? 240 mg/dl

Diabetic symptoms

- Polydipsia : Yes
- Polyphagia : Yes
- Polyurea : Yes
- Neuritis : Yes
- Visual Acuity : Normal

After consuming pure fruit-based Jambul Vinegar for 30 days

P.P. Blood Sugar Levels = 180 mg/dl (Avg.)

Use of any other drug during 15 days = No

Diabetic Symptoms

- Polydipsia : NO
- Polyphagia : Yes
- Polyurea : Less
- Neuritis : Less
- V / T : Normal

2) Case

Age : 46 yrs.

Education : High School

Occupation : Typing Shop

Economic Status : Low-income group

Weight : 60 Kg

Height : 5 feet 4 inch

- When the disease was diagnosed?

June, 2009, Type-2

- Nature of Treatment medications?

Occasionally/ Allopathic drugs

- Average Post Prandial Blood Sugar Levels? 310 mg/dl

Diabetic Symptoms

- Polydipsia : Yes
- Polyphagia : Yes
- Polyurea : Yes
- Numberless & Tingling : No
- V/T : Normal

After consuming pure fruit-based Jambul Vinegar for 30 days

P.P. Blood Sugar Levels = 230 mg/dl

Diabetic symptoms

- Polydipsia : No
- Polyphagia : No
- Polyurea : Yes (mild)
- Numberless & Tingling : No
- V / T : Normal

3) Case

Age : 51 yrs.

Education : Graduate

Occupation : Clerk

Economic Status : Middle income group

Height : 5 feet 2 inch

Weight : 70 kg

- When the disease was diagnosed?

April 2007 (Type-2)

- Nature of treatment/ medications?

Herbal formulations and no allopathic drugs

- Average post Prandial Blood Sugar Level? 380 mg/dl

Diabetic Symptoms

- Polydipsia : Yes
- Polyphagia : No
- Polyurea : Yes
- Numberless & Tingling : Yes
- V / T : Abnormal

After consuming pure fruit-based Jambul Vinegar for 30 days

P.P. Blood Sugar Levels = 260 mg/dl

- Polydipsia : Yes
- Polyphagia : No
- Polyurea : Yes
- Numberless & Tingling : Yes
- V / T : Abnormal

4) Case

Age : 44 yrs.

Education : Intermediate

Occupation : House wife

Economic Status : Middle class

Height : 5 feet 3 inch

Wight : 78 kg

- When the disease was diagnosed?

2009 (Type-2)

- Nature of Treatment/Medications

Allopathic Treatment (Oral tabs)

- Avg. P.P. Blood Sugar Levels?
340 mg/dl

Diabetic symptoms

- Polydipsia : Mild
- Polyphagia : Yes
- Polyurea : Nil
- Numberless & Tingling : Yes
- V/T : Normal

After consuming pure fruit-based Jambul Vinegar for 30 days

P.P. Blood Sugar Levels = 280 mg/dl

Diabetic symptoms

- Polydipsia : No
- Polyphagia : No
- Polyurea : Mild
- Numberless & Tingling : Yes
- V/T : Normal

5) Case

Age : 50 yrs.
Education : Intermediate
Occupation : Businessman
Economic Status : Middle income class
Height : 5 feet 6 inch
Weight : 72 kg

P.P. Blood Sugar Levels before Jambul Vinegar Consumption

320 mg/dl

After consuming pure fruit-based Jambul Vinegar for 30 days

270 mg/dl

6) Case

Age : 48 yrs.
Education : Graduation
Occupation : Shop Keeper
Economic Status : Middle income class
Height : 5 feet 4 inch
Weight : 65 kg

P.P. Blood sugar Levels before Jambul Vinegar Consumption

250 mg/dl

After consuming pure fruit-based Jambul Vinegar for 30 days

210 mg/dl

7) Case

Age : 42 yrs.
Education : 10th Class
Occupation : General Store Keeper
Economic Status : Middle income class
Height : 5 feet 2 inch
Weight : 72 kg

P.P. Blood Sugar Levels before Jambul Vinegar Consumption

380 mg/dl

After consuming pure fruit-based Jambul Vinegar for 30 days

310 mg/dl

8) Case

Age : 48 yrs.
Education : Post Graduate
Occupation : Teacher
Economic Status : Middle income class
Height : 5 feet 3 inch
Weight : 56 kg

P.P. Blood Sugar Levels before Jambul Vinegar Consumption

260 mg/dl

After consuming pure fruit-based Jambul Vinegar for 30 days

210 mg/dl

9) Case

Age : 50 yrs.
Education : 8th Class
Occupation : Housewife
Economic Status : Low-income class
Height : 5 feet 2 inch
Weight : 72 kg

P.P. Blood Sugar Levels before Jambul Vinegar Consumption

310 mg/dl

After consuming pure fruit-based Jambul Vinegar for 30 days

275 mg/dl

10) Case

Age : 52 yrs.
Education : Intermediate
Occupation : Shop Keeper
Economic Status : Middle income class
Height : 5 feet 6 inch
Weight : 80 kg

P.P. Blood Sugar Levels before Jambul Vinegar Consumption

400mg/dl

After consuming pure fruit-based Jambul Vinegar for 30 days

320 mg/dl

Observation of the study

Interview of control group clearly indicates an improvement in the post prandial Blood Sugar Levels in the Diabetics after the consumption of a fruit based Jambul Vinegar bought from a local market having a quality Govt. Mark "FPO" when compared with Placebo group. Data collected from the Control group. It was found that values of P.P. Blood Glucose Levels in the subjects consuming Vinegar for 15 days was decreased up to a certain level while in few cases it dips down to normal.

Results

1. For First Observation

- Initial Post Prandial Blood Glucose Level (PP₁)=240

mg/dl

- Final Post Prandial Blood Glucose Level (PP₂)=180 mg/dl
- Difference (D)=60mg/dl

2. For Second Observation

- Initial Post Prandial Blood Glucose Level (PP₁)=310 mg/dl
- Final Post Prandial Blood Glucose Level (PP₂)=240 mg/dl
- Difference (D)=70 mg/dl

3. For Third Observation

- Initial Post Prandial Blood Glucose Level (PP₁)=390 mg/dl
- Final Post Prandial Blood Glucose Level (PP₂)=270 mg/dl
- Difference (D)=120 mg/dl

4. For Fourth Observation

- Initial Post Prandial Blood Glucose Level (PP₁)=340 mg/dl
- Final Post Prandial Blood Glucose Level (PP₂)=280 mg/dl
- Difference (D)=60 mg/dl

5. For Fifth Observation

Initial Post Prandial Blood Glucose Level (PP₁)=320 mg/dl
 Final Post Prandial Blood Glucose Level (PP₂)=270 mg/dl
 Difference (D)=50 mg/dl

6. For Sixth Observation

- Initial Post Prandial Blood Glucose Level (PP₁)=250

mg/dl

- Final Post Prandial Blood Glucose Level (PP₂)=210 mg/dl
- Difference (D)=40 mg/dl

7. For Seventh Observation

- Initial Post Prandial Blood Glucose Level (PP₁)=380 mg/dl
- Final Post Prandial Blood Glucose Level (PP₂)=310 mg/dl
- Difference (D)=70 mg/dl

8. For Eighth Observation

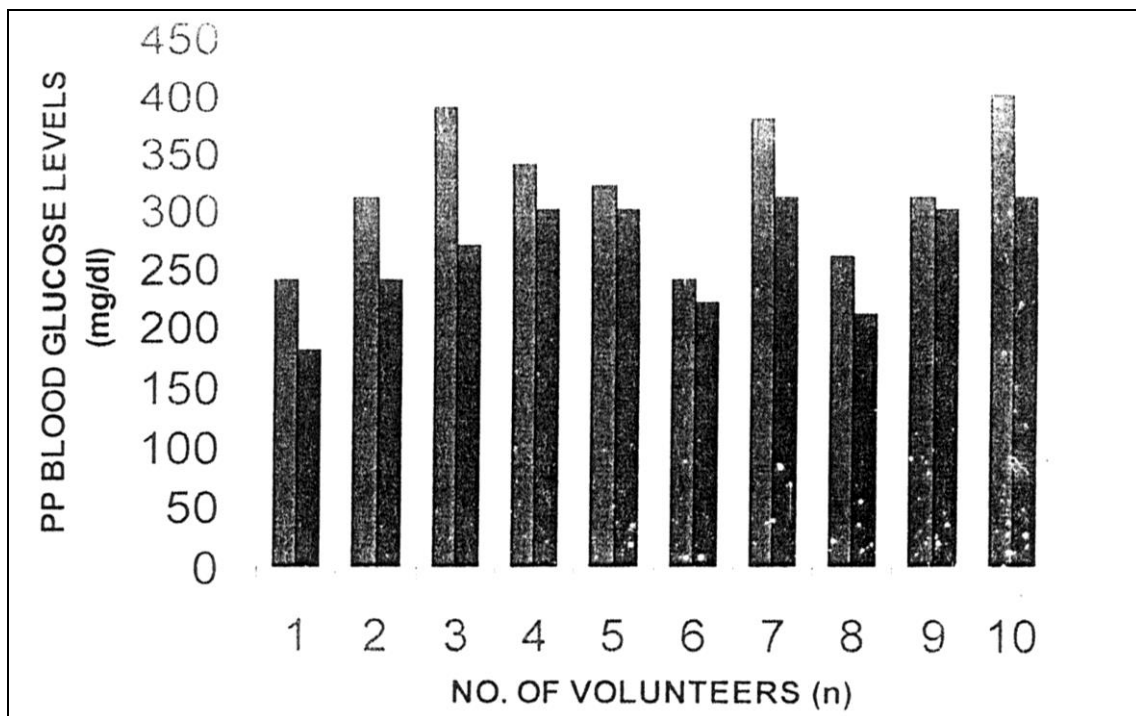
- Initial Post Prandial Blood Glucose Level (PP₁)=260 mg/dl
- Final Post Prandial Blood Glucose Level (PP₂)=210 mg/dl
- Difference (D)=50 mg/dl

9. For Ninth Observation

- Initial Post Prandial Blood Glucose Level (PP₁)=310 mg/dl
- Final Post Prandial Blood Glucose Level (PP₂)=275 mg/dl
- Difference(D)=35 mg/dl

10. For Tenth Observation

- Initial Post Prandial Blood Glucose Level (PP₁)=400 mg/dl
- Final Post Prandial Blood Glucose Level (PP₂)=320 mg/dl
- Difference(D)=80 mg/dl



Comparisons of PP (PP-1, PP-2) Blood glucose levels of volunteers before and after vinegar consumption

Conclusion

Trials conducted under the topic "A study of therapeutic action of Jambul Vinegar in Diabetes Mellitus" the main objective was to find out the beneficial effects if any of the Jambul fruit vinegar on the post Prandial Blood glucose Levels I the Patients having established Diabetes Mellitus. So, one group of 5 males and 5 females had given 2 tea spoon Vinegar 15 minutes before each main meals as a salad dressing for 15 days. Before starting the trial, each assigned patient has been

investigated for his P.P. Blood Glucose Level- and then his/her Pre-trial reading was compared with post-trial reading. A major difference has been observed in majority of patients. Thus, conclusion made after conducting the study was that those diabetic patients who consumed traditional Jambul fruit-based vinegar before each main meal maintained low post Prandial Blood Glucose Level in comparison to others. This short study Provides a platform for the further diet-based strategies for maintenance of blood glucose levels in diabetics.

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