

EFFECTS OF AMLAKI CHURNA ON BLOOD GLUCOSE LEVELS IN PRE-DIABETES & TYPE 2 DIABETES MELLITUS: A CASE STUDY**Bishnupriya Mohanty¹, Rohit Kumar Yadav²**¹MD(Samhita), PhD(Basic Principle). Professor & Head Department of Sanskrit Samhita and Siddhanta²MD Scholar. Gomantak Ayurveda Mahavidyalaya & Research Centre, Shiroda, Goa. 403103.**Corresponding Author:** drbishnupriyadas@gmail.com<https://doi.org/10.46607/iamj1212102024>**(Published Online: October 2024)****Open Access**

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Article Received:08/09/2024 - **Peer Reviewed:** 29/09/2024 - **Accepted for Publication:** 13/10/2024.**ABSTRACT**

Diabetes being the “iceberg disease”, the incidence of type 2 diabetes mellitus has increased globally due to sedentary lifestyle, food habits, stress, strain, etc. The prevalence of type 2 diabetes mellitus is over 26.4% of the population in Goa. In Ayurveda Acharya Bhavaprakasha quoted *आमलकी* (*Embllica officinalis*) as “*रक्तपित्तप्रमेहघ्निरंघ्र्यंरसायनम्*” and explains pharmacological action of *आमलकी* in *haritakyadi varga* (shloka no. 37-41) as *वयस्थापन, रसायन, त्रिदोषशामक* and specifically *Pramehaghna*. *It is considered the best Naimittika Rasayana for the management of diabetes mellitus*. Hence *आमलकी* churna is selected in type 2 diabetes mellitus for the study. In the present study 5 subjects of pre-diabetes and 5 subjects of known case of diabetes mellitus are selected. All 10 subjects were treated with *आमलकी* churna 2 gm twice daily half an hour before food with warm water. The effect of therapy was evaluated at the interval of 4 weeks which was done on the basis of objective parameters. The objective parameters were fasting blood sugar levels, post prandial blood sugars and glycosolated hemoglobin (HbA1C). It was seen that *आमलकी* churna has reduced blood sugar levels. It also reduced the dose of conventional drug which may cause side effects with long term use.

Keywords: Type 2 Diabetes, Ayurveda, *Embllica officinalis*, Prameha, *आमलकी* churna, Blood sugar levels.

INTRODUCTION

Diabetes is rising alarmingly all over the globe. The incidence of type 2 diabetes mellitus has increased globally due to sedentary lifestyle, food habits, stress, strain etc. The prevalence of type 2 diabetes mellitus is over 26.4% of the population in Goa. It is predicted that the current number suffering from diabetes mellitus will double by 2050. Every second person living with diabetes is unaware that they have diabetes. Indians have natural/more tendency towards earlier onset of type 2 diabetes due to their phenotype. It is observed that Indian phenotype has high body fat % despite of having lower BMI.

Diabetes mellitus is a group of diseases of metabolic disorders that lead to hyperglycaemia due to insulin deficiency, resistance or both. Insulin is a hormone made by the beta cells of the pancreas which help to control blood glucose level. Diabetes mellitus is classified as Type 1 DM, Type 2 DM. Diabetes develop due to diminished production of insulin is known as Type 1 DM (Insulin dependent Diabetes Mellitus) and resistance to effects of Insulin is known as Type 2 DM (Non-Insulin Dependent Diabetes Mellitus). Both lead to hyperglycaemia, which largely causes acute signs of diabetes. They are excessive urine production, excessive thirst, blurred vision, unexplained weight loss, lethargy and changes in energy metabolism. Diabetes mellitus is usually irreversible and although patients can have a reasonably normal lifestyle, its late complications result in reduced life expectancy and major health issues. These include macrovascular disease, leading to an increased prevalence of coronary artery disease, peripheral vascular disease and stroke, and microvascular damage causing diabetic retinopathy and nephropathy. Neuropathy is another major complication

In Ayurveda Acharya Charaka, Acharya Vagbhata and Acharya Sushruta have mentioned and emphasized diabetes mellitus. In today's era it is observed due to lack of time, work schedule, uneven food timings and food habits, etc because of which patients are unable to follow suggested lifestyle changes whereas in Ayurveda those causes are considered to be the etiological factors for the cause of Prameha.

The cardinal symptoms of Prameha mentioned in Samhitas are Prabhuta Mutrata and Avilamutrata. There are 20 types of Prameha Roga, and diabetes is related to Madhumeha. 10 types of Kaphaja, 6 types of Pittaja and 4 types of Vataja Prameha Roga are mentioned. Prameha Roga are mentioned under one among Ashtamahagada. Due to the indulgence of Nidana (sleeping during daytime, laziness, no physical workout, eating curd and its products, Navadhan-ya, Aanupa Mamsa, etc) causing Aparipakva Kapha and Meda which in turn vitiates Kleda and Meda further resulting DoshadushyaSamoorchana. Kleda remaining after Dhatvagnipaka through Mootravaha Srotas gets localised at Bastimukha and lead to symptoms like Prabhuta Mutrata, Avila Mutrata, etc.

SELECTION OF DRUG:

In Ayurveda there have been mentioned various Dravya for the management of diabetes mellitus. There is this single herb called Amalaki (*Embilica officinalis*) which is very effective medicine in the management/treatment of diabetes mellitus. Various Acharyas have been mentioned anti diabetic effect of Amalaki.

- Acharya Charaka has mentioned Amalaki as one of the important contents of Prameha Nashaka Yoga in 6TH chapter of Chikitsa Sthana. (C.Chi.6/26-40.)
- Acharya Vagbhata explained Nisha Amalaki Churna in A.H. Chi 12/5
- Acharya Bhavaprakash quoted Amalaki as a " रक्तपित्तप्रमेहहृत्परं वृष्यरसायनम्: in Haritakyadi Gana/39.

It is also said to be with various research reviews that Amalaki also has:

1. Antioxidant action.
2. Hypolipidemic action.
3. Hypoglycaemic action.
4. Immunomodulatory action.

AIM AND OBJECTIVES:

To evaluate the acute effect of Amalaki Churna in the management of blood glucose levels in pre diabetic and type II diabetes mellitus patients.

CLINICAL STUDY:

- Study setting:** The patient of either sex suffering from type II diabetes mellitus or patient who were pre diabetic.
- Sample size:** 10 patients (5 patient pre diabetic and 5 patients with diabetes mellitus).
- Duration:** Period of four weeks.
- Diagnostic criteria:** Patients with high blood glucose level and obtain Ayurveda treatments for control it.
- Inclusion criteria:** Regular patients presenting with Type 2 Diabetes mellitus with comorbidities on alternate medicine were selected. And also, patients will clinical symptoms of prediabetes were selected. irrespective of sex. religion, habits etc.
- Exclusion criteria:** Patients chronic diseases like CKD. IHD, etc and patients who disobey the instructions given by the doctor and irregular patients in the diabetic clinic were not selected.
- Laboratory investigations:** FBS (Fasting blood sugar) level, PPBSL (Post prandial blood sugar) level and GHB (Glycosylated haemoglobin) of each patient were carried out before treatment, at interval of 2 weeks and end of treatment.
- Patient assessments:** Patients were assessed on general physical examination, systemic examination vitals, Asthavidha Pariksha, Dashavidha Pariksha and were evaluated respectively by the above laboratory investigations.
- Instructions:** All the selected patients were instructed for same dietary conditions, lifestyle and administration of anti-diabetic drugs for four consecutive weeks.

DOSAGE AND ADMINISTRATION OF DRUG:

All 10 subjects were treated with आमलकी churna 2 gm twice daily half an hour before food with warm water.

TABLE 1: LABORATORY INVESTIGATION DATA OF PREDIABETIC PATIENTS PRIOR TO TREATMENT

DATE	PATIENTS NAME	FBSL (mg/dL)	PPBSL (mg/dL)	HbA1C/USL
11-12-2023	Mr ABC	112	142	6.1 %
19-12-2023	Mr DEF	124	152	6.0%
24-12-2023	Mr MNO	118	138	5.9%
26-12-2023	Mr PQR	132	162	6.4%
29-12-2023	Mr XYZ	116	146	6.2%

TABLE 2: LABORATORY INVESTIGATION DATA OF PREDIABETIC PATIENTS AT INTERVAL OF 2 WEEKS OF TREATMENT

DATE	PATIENTS NAME	FBSL (mg/dL)	PPBSL (mg/dL)	HbA1C/USL
27-12-2023	Mr ABC	108	136	-
02-01-2024	Mr DEF	120	144	-
08-01-2023	Mr MNO	124	136	-
09-01-2024	Mr PQR	124	150	-
13-01-2024	Mr XYZ	106	140	-

TABLE 3: LABORATORY INVESTIGATION DATA OF PREDIABETIC PATIENTS AFTER COMPLETION OF TREATMENT

DATE	PATIENTS NAME	FBSL (mg/dL)	PPBSL (mg/dL)	HbA1C/USL
10-01-2024	Mr ABC	100	128	6.0%
18-01-2024	Mr DEF	112	132	5.8%
20-01-2023	Mr MNO	108	130	5.9%
23-01-2024	Mr PQR	116	138	6.1%

29-01-2024	Mr XYZ	104	132	6.0%
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FIGURE 1: THE GRAPHICAL REPRESENTATION OF THE DATA

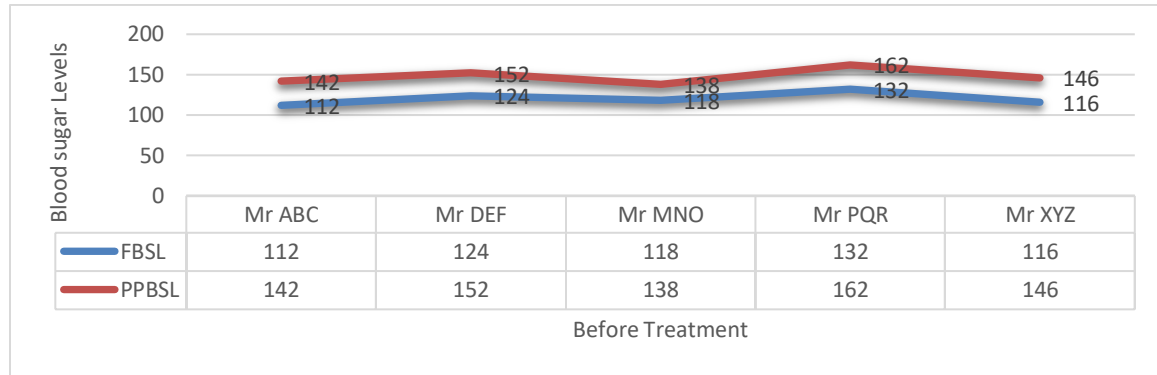


FIGURE 2: AT THE INTERVAL OF 2 WEEKS

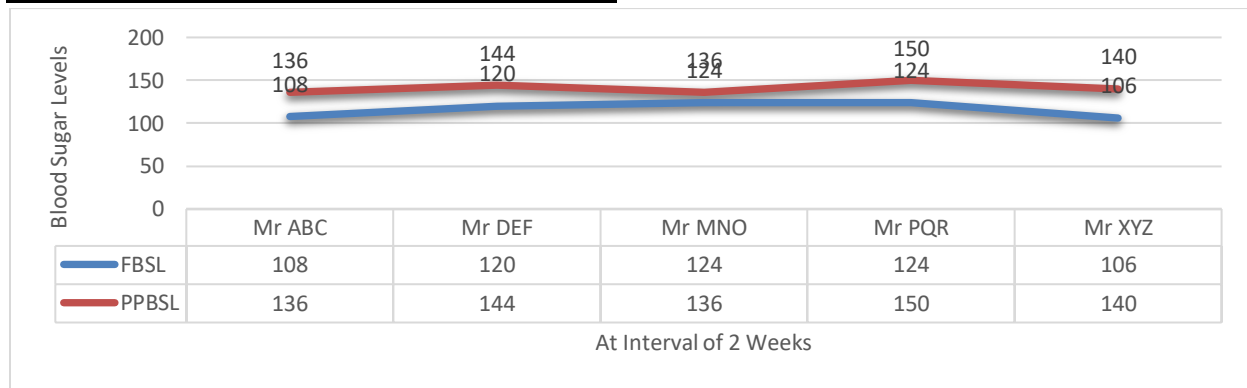


FIGURE 3: AFTER TREATMENT

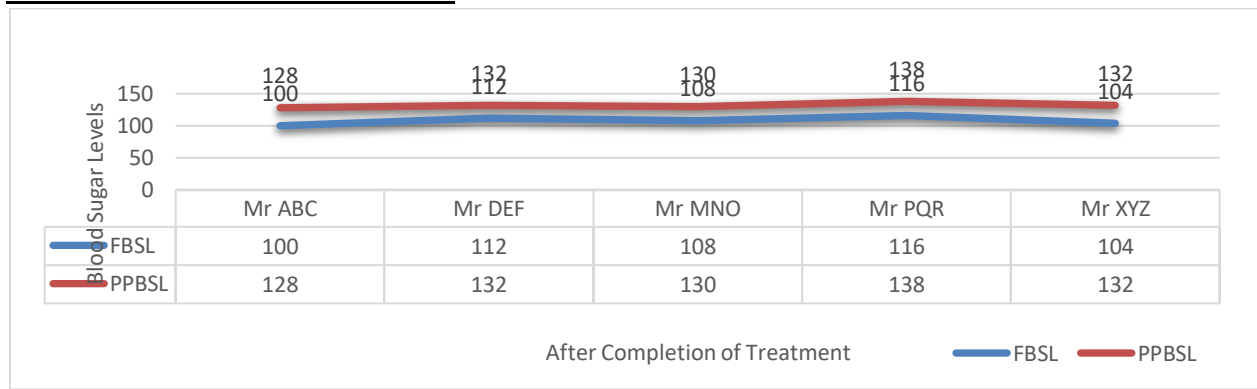


FIGURE 4: COMPARISON OF FASTING BLOOD SUGAR, PRE AND POST TREATMENT

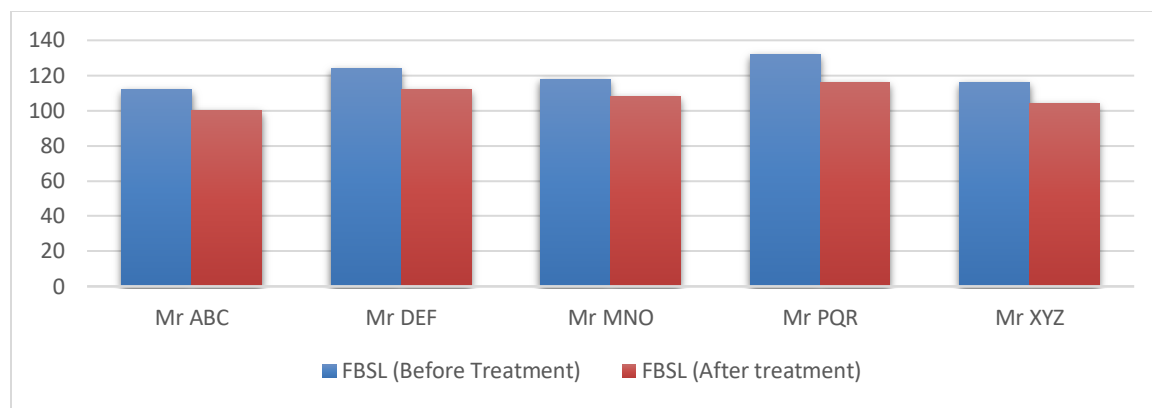


FIGURE 5: COMPARISON OF POST PRANDIAL BLOOD SUGAR, PRE AND POST TREATMENT

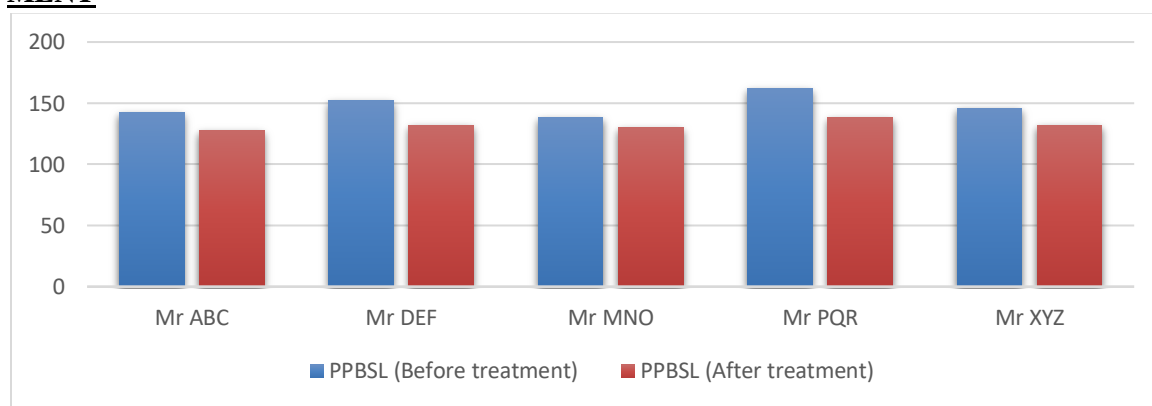


TABLE 4: LABORATORY INVESTIGATION DATA OF DIABETIC PATIENTS PRIOR TO TREATMENT

DATE	PATIENTS NAME	FBSL (mg/dL)	PPBSL (mg/dL)	HbA1C/USL
15-12-2023	Mr ABC	212	242	9.1 %
16-12-2023	Mr DEF	168	252	7.9%
21-12-2023	Mr MNO	138	188	6.9%
24-12-2023	Mr PQR	132	162	7.4%
28-12-2023	Mr XYZ	146	306	7.4%

TABLE 5: LABORATORY INVESTIGATION DATA OF PREDIABETIC PATIENTS AT INTERVAL OF 2 WEEKS OF TREATMENT

DATE	PATIENTS NAME	FBSL (mg/dL)	PPBSL (mg/dL)	HbA1C/USL
29-12-2023	Mr ABC	198	200	-
30-01-2024	Mr DEF	154	190	-
04-01-2023	Mr MNO	130	136	-
08-01-2024	Mr PQR	124	150	-
11-01-2024	Mr XYZ	126	232	-

TABLE 6: LABORATORY INVESTIGATION DATA OF PREDIABETIC PATIENTS AFTER COMPLETION OF TREATMENT

DATE	PATIENTS NAME	FBSL (mg/dL)	PPBSL (mg/dL)	HbA1C/USL
16-01-2024	Mr ABC	170	150	8.9%
18-01-2024	Mr DEF	140	144	7.6%
20-01-2023	Mr MNO	122	132	6.6%
22-01-2024	Mr PQR	118	138	7.2%
25-01-2024	Mr XYZ	108	132	7.3%

FIGURE 6: THE GRAPHICAL REPRESENTATION OF THE DATA

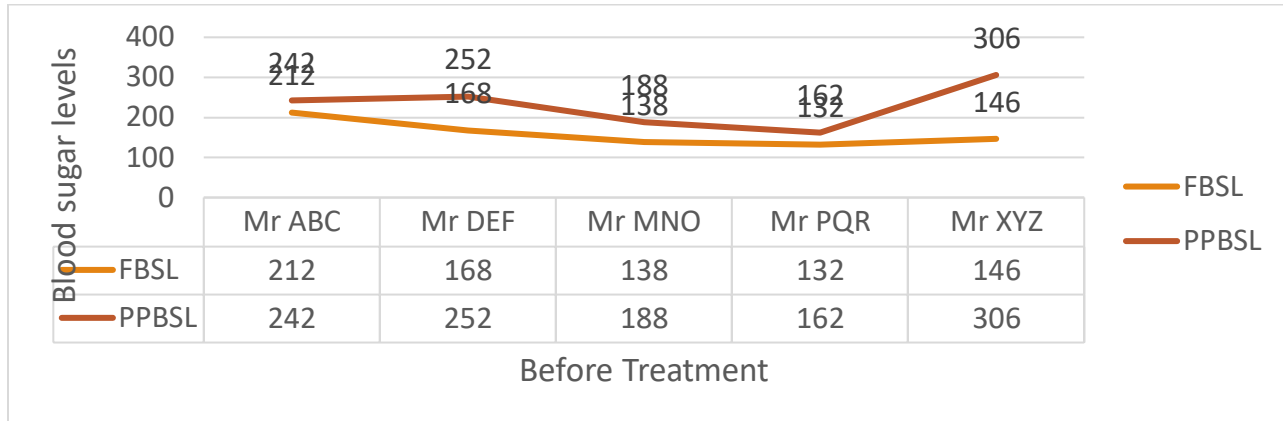


FIGURE 7: AT THE INTERVAL OF 2 WEEKS

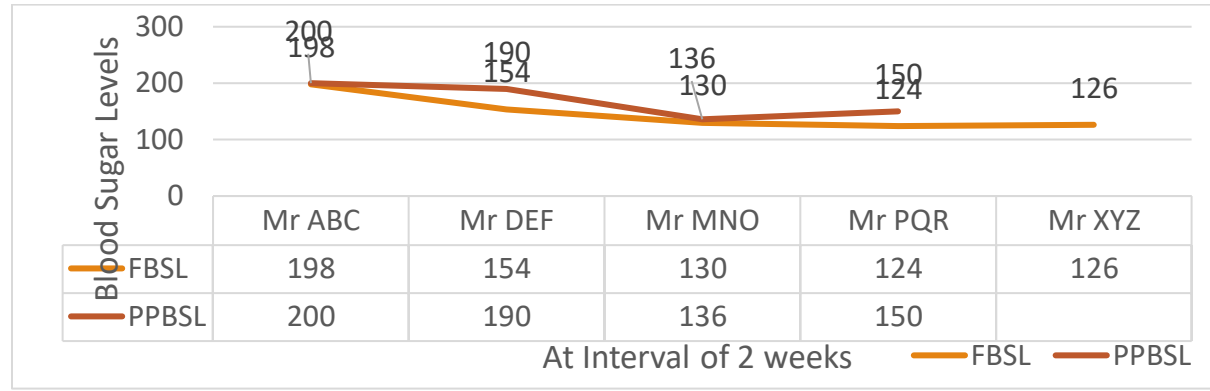


FIGURE 8: AFTER TREATMENT

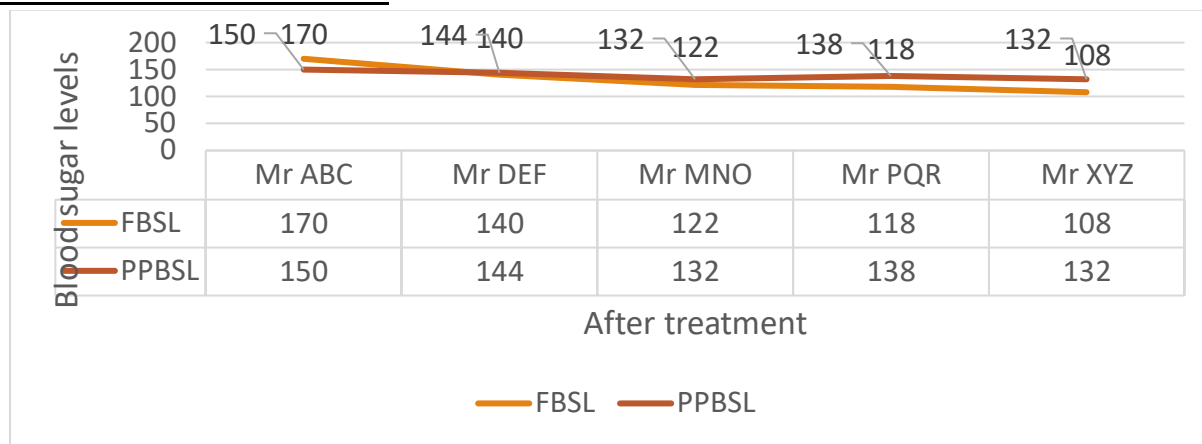


FIGURE 9: COMPARISON OF FASTING BLOOD SUGAR, PRE AND POST TREATMENT

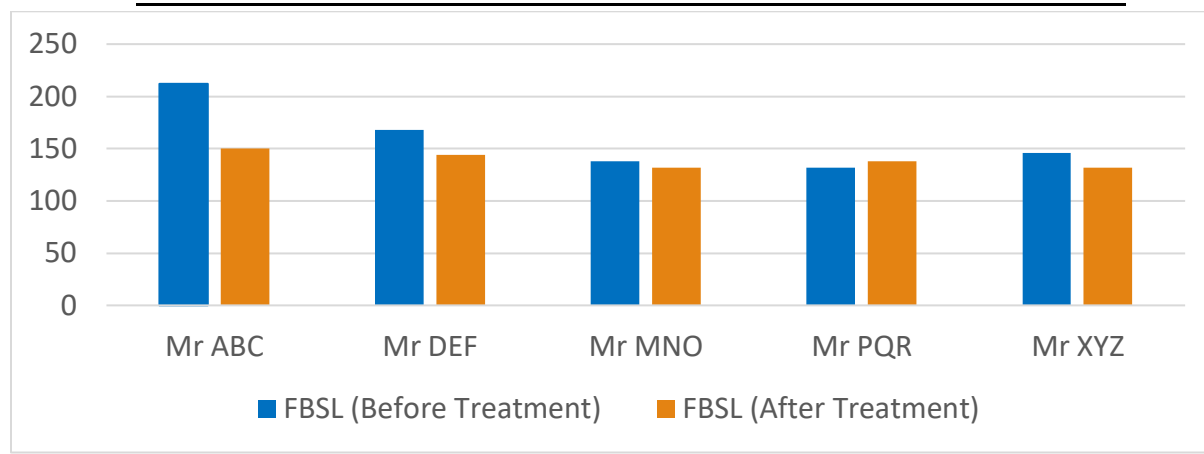
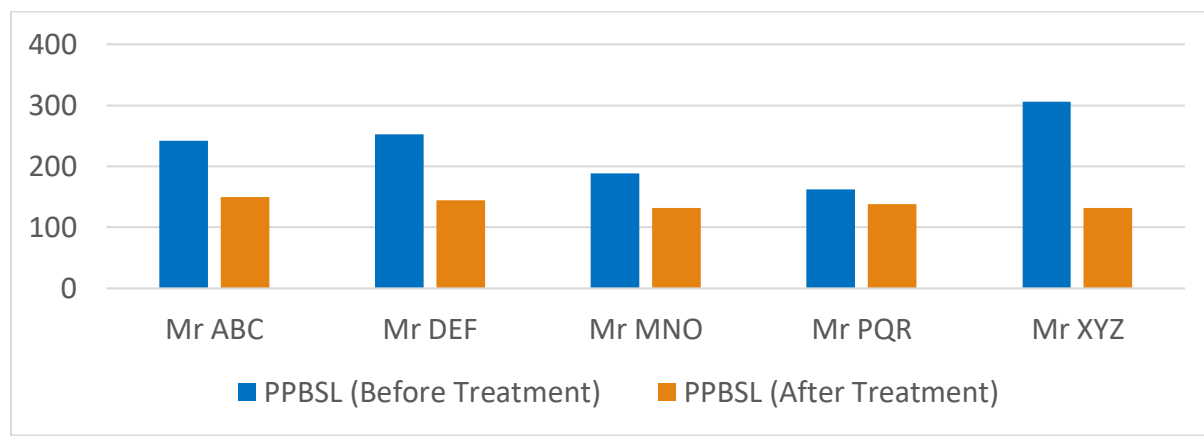


FIGURE 10: COMPARISON OF POST PRANDIAL BLOOD SUGAR, PRE AND POST TREATMENT



DISCUSSION

As we know, long-standing diseases and old age people are prone to uncontrolled diabetes. This present study shows significant control over blood sugar level with simple herbs. As we know, uncontrolled diabetes leads to various complications like macro and micro vascular diseases, nerve damage, diabetic retinopathy, diabetic nephropathy, etc., Amlaki Churna in prediabetic gave remarkable changes in the result. Amalaki is an excellent antioxidant and has Rasayana properties. It boosts body immunity, reduces stress levels, and improves glucose metabolism. According to Ayurveda, Amalaki - *Embllica officinalis* is having Amla rasa predominant all five Rasas except Lavana rasa. It has Guru, Ruksha and Shita properties. Madhura vipaka and Shita virya. It is Tridosahar and doing Anulomana. Madhumeha is Vatapradhanvyadhi associated with Kapha and Pitta. Due to Amla rasa, it is vata nashak and because of Madhura rasa and sheet Veerya it alleviates Pitta, and it is Kaphashamak due to its Kashaya and Rukshaguna, so Amalaki has Tridosha Nashaka property. Especially Amla and Katu rasa present in Amalaki improves jatharagni and correct digestion and metabolism. Due to Amla and Madhur rasa, it pacifies Vata. Because of Madhura Rasa and Sheeta Guna, it pacifies Pitta. Due to Kashaya and Ruksha Guna it alleviates Kapha Dosha and corrects Medodhatu Dushti and does Kleda Shoshana which is useful in Samprapti bhanga of Prameha.

CONCLUSION

Amalaki Churna showed significant improvement in this case study. Amalaki Churna also showed significant improvement in fasting blood sugar levels and post prandial blood sugar levels. So, it is concluded that there is the significant effect of Amalaki Churna

as a primary drug in prediabetic patients and adjuvant drug in chronic uncontrolled type II diabetes mellitus. It helps to reduce the dosage of modern medicine which may cause side-effects on long term use. Amalaki Churna is cost effective and can be administered in diagnosed diabetes mellitus patients without any adverse drug reaction (ADR). Since this is a small control case study, further study is needed to observe the effect of the above treatment on a greater number of patients and for longer duration to remark other benefits.

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