



## Alpha: Glucosidase inhibitor and its relevance in prediabetes: An observational study

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### Abstract

**Aim:** Importance of Alpha- glucosidase inhibitor in high risk patients and prediabetes patients. Aim of study is to show multiple way approach helps in achieving glycemic control in prediabetic patient and it can delay the patients from developing frank diabetes mellitus with multifactorial approach.

**Material and Methods:** In the present study a total of 210 prediabetic patients were selected out of which only 50 participants were eligible for study. Inclusion Criteria: 1) Age: 28-68yrs, 2) FBS: 101-125mg/dl, PPBS: 141 -199mg/dl, 3) BMI: 23-28 4) HbA1c: 5.7-6.4%. Exclusion Criteria: 1) Known Diabetic 2) Any Past history of Diabetic drug intake 3) Preexisting CAD, Renal Dysfunction, Hepatic Dysfunction, Gastro-intestinal Disorders.

**Results:** 50 eligible patients were enrolled as per Inclusion criteria, they were divided into two groups, Group A was placed on Diet, lifestyle modification and Voglibose 0.2mg twice a day, whereas the Group B was placebo group. In group A, there were 12 males (46.15%), and 14 female subjects (53.84%), whereas in the placebo arm, there were 10 males (41.66%), 14 Female (58.34%). It was observed that patients on alpha glucosidase inhibitors had better glycemic control than placebo group arm. The glycemic level in Group A was in normoglycemic range with alpha glucosidase inhibitors and diet and lifestyle modification than compared to placebo arm group

**Conclusion:** Usage of  $\alpha$  glucosidase inhibitor is higher in Asian countries. It is emerged as the alternative to metformin in management of prediabetes patients. In emerging countries like India it is been used vastly in patients with post prandial surge in glycemic levels. It is now proven that these drugs are novel drugs should be used as the alternative to metformin in selected patients. Further, randomized cross trials and large population based studies are required. The limited small study has shown significant reduction of glycemic level in prediabetic patients.

**Keywords:** prediabetes, impaired fasting glucose diabetes mellitus voglibose, metformin Alpha glucosidase inhibitor glycemic control glycosylated Hemoglobin

### Introduction

Diabetes Mellitus (DM) is a chronic disorder of metabolism, it has affected worldwide people. It has a major significant role in mortality & morbidity. It is well known fact that poor glycemic control can lead to complication such as micro-vascular and macro-vascular involvement, this can eventually leads to multiple organs dysfunction [1]. as per various projection it is estimated that by the 2030, the impact of this diabetes will be huge on financially and incidence will be two or three fold higher in India [1, 2].

Many Diabetes associations have come up with various guidelines for managing diabetes mellitus but prediabetes is highly controversial area, to treat or not to treat. As the ADA, it has clearly defined IFG as FBG levels of 100 to 125 mg/dL, and IGT as two-hour glucose levels of 140 to 199 mg/dL on the 75-g oral glucose tolerance test [3].

There are two molecules belong to alpha glucosidase inhibitors i.e Acarbose, voglibose. It is known that voglibose have a reversible inhibition of membrane bound intestines  $\alpha$  glycosidase hydrolyze enzymes which can result in hydrolyzing the oligosaccharides and disaccharides to end product like glucose and other monosaccharide's in the brush border of the small intestine [4, 6]. It is proved time and again by many studies that Prediabetes itself can be in association with insulin resistance and which is directly proportional to cardiovascular risk.

### Methods

This study was an observational study comprising of voglibose and placebo in individuals with impaired glucose tolerance. Inclusion Criteria: 1) Age: 28-68yrs, 2) FBS: 101-125mg/dl, PPBS: 141 -199mg/dl, 3) BMI: 23-28 4) HbA1c: 5.7-6.4%. Exclusion Criteria: 1) Known Diabetic 2) Any Past history of Diabetic drug intake 3) Preexisting CAD, Renal Dysfunction, Hepatic Dysfunction, Gastro-intestinal Disorders.

### Results

50 eligible patients were enrolled as per Inclusion criteria, they were divided into two groups, Group A (n=26) was placed on Diet, lifestyle modification and Voglibose 0.2mg twice a day, whereas the Group B (n=24) was placebo group. The mean duration of treatment was 24.2 weeks (SD 18.8)— i.e.24.1 weeks (17.2) for voglibose and 25.9 weeks (18.3) for placebo. In group A (n=26), there were 12 males (46.15%), and 14 female subjects (53.84%), whereas in the placebo arm (n=24), there were 10 males (41.66%), 14 Female (58.34%). It was observed that patients on alpha glucosidase inhibitors had better glycemic control than placebo group arm. The glycemic level in Group A was in normoglycemic range with alpha glucosidase inhibitors and diet and lifestyle modification than compared to placebo arm group.

## Discussion

Voglibose is  $\alpha$  glucosidase inhibitor are commonly used in Asian countries due to higher post prandial peaks in these countries, the main reason of these post prandial surge in Asian countries is due to the dietary habit and multiple other cofactor's. In this study we have seen the prompt and proper management of prediabetes will prevent the patient from developing or progressing towards the diabetes mellitus and also helps in prevention of patient from future complication in relation to diabetes <sup>[6]</sup>.

Two well-known studies like Stop – NIDDM Trail and Chiasson JL Study (2002) have shown significant reduction of Post prandial blood glucose. It has also shown that it significantly reduces the progression of prediabetes to diabetes, apart from this it also shown that it has a sizable number of patients had reduction of blood pressure and this eventually culminated in CVD incidence <sup>[7]</sup>.

Pavitra Raj Dewda *et al.* 2013 published a paper in regards to management of prediabetes. They had formulated a questioner and had enrolled 117 doctors for this, it was found that they was an equivocal response on diet and exercise but in regards to medication majority favoured metformin as first line followed by voglibose as alternative.

## Conclusion

A glucosidase inhibitor is highly under rated molecule. Usage of  $\alpha$  glucosidase inhibitor is higher in Asian countries. It is emerged as the alternative to metformin in management of prediabetes patients. In emerging countries like India it is been used vastly in patients with post prandial surge in glycemic levels. It is now proven that these drugs are novel drugs should be used as the alternative to metformin in selected patients. Further, randomized cross trials and large population based studies are required. The limited small study has shown significant reduction of glycemic level in prediabetic patients.

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