More than half of the global diabetes burden now resides in China and India which has outpaced the developed economies from North America and Europe. This is clearly linked to food and activity patterns which have undergone a sudden transformation in these geographic regions. Traditional Asian Indian and Chinese diets are carbohydrate-rich sometimes even as high as 80 percent of the macronutrient composition coming from this proximate principle. The higher glucose load in the Indo-Chinese diets lead to greater prandial glycemic excursion, increased glucosidase and incretin activity in the gut and may need special therapeutic strategies to tackle these glucose peaks. Thus a typical Indo-Chinese post-meal glucose curve has wider glycemic excursion as well as greater post-prandial load which leads to higher lipemic peaks and has epidemiological links to cardiovascular disease. The excessive postprandial glucose excursion in people with IGT and type 2 diabetes is associated with a cascade of proatherogenic events. Patients with Type 2 Diabetes may spend more than twelve hours per day in the postprandial state. Many of these early prandial peaks like after 30 minutes are often missed especially as now an US centric fasting postprandial state. many of these early prandial peaks like after 30 minutes are often missed especially as now an US centric fasting postprandial state. Many of these early prandial peaks like after 30 minutes are often missed especially as now an US centric fasting postprandial state.

The Indo-Chinese gut needs to handle much more glucose load than a Caucasian or others. This leads to greater exposure of carbohydrates on the L-cell of the intestine as well as the brush border of the intestine which makes alpha glucosidases. Therefore the peaks and excursions of glucose and lipids are more in the Indo-Chinese population. Therefore the drugs working via the glucosidase and incretin pathway thus have a greater glycemic efficacy in these high glycemic load populations unlike the Western environment which are low carbohydrate predominant compared to the Indo-Chinese cohort. There is a need of therapeutic agents that target the early stages of type 2 diabetes, such as the α-glucosidase enzyme inhibitors like acarbose, which reduces postprandial hyperglycemia and hyperinsulinaemia and increases GLP-1, may have a more prominent role to play in diabetes in such settings. In an Indian setting the role of alpha glucosidase inhibitors like acarbose is even more significant as our meal component is carbohydrate rich. The Cochrane Library lists 143 published placebo-controlled trials that have evaluated the efficacy of acarbose on HbA1c and fasting and postprandial blood glucose. Acarbose, specifically reduces postprandial hyperglycemia with an average reduction of HbA1c by 0.8% in Cochrane metaanalysis. This is associated with pleiotropic effects on a broad spectrum of cardiovascular (CV) risk factors: reduction of overweight, lowering of blood pressure, triglycerides, hsCRP, fibrinogen and other biomarkers of low grade inflammation. The CV outcome based STOP NIDDM trial was the first prospective interventional study testing the postprandial hyperglycemia hypothesis as a risk factor for CVD. The data shows that treatment with acarbose led to a relative risk reduction of 91, 49 and 34% in clinical myocardial infarction, any CV event and new hypertension respectively.  

A meta-analysis including seven randomized, double-blind, placebo-controlled acarbose studies with a minimum treatment duration of 52 weeks showed that intervention with acarbose led to a relative risk reduction of 64 & 35% in clinical MI and any CV event respectively. Metformin is now established as a first-line antidiabetic therapy for the management of type 2 diabetes. The drug’s antiatherosclerotic and cardioprotective effects have recently been confirmed in prospective and retrospective studies. In newly-diagnosed type 2 diabetic patients followed for a median of 11 years in the UKPDS, patients who received metformin benefited from clinically and statistically significant improvements in the risk of all-cause death (36%), diabetes related death (42%), myocardial infarction (39%), and in a composite measure of diabetes-related complications. More than 30 years of Metformin “legacy” which confers “Metabolic Memory” when glycemic control was tight early in the disease is now well known. We also know now novel mechanisms of Metformin action and its pleotropic effect including its new anti-cancer effects which is now known after 50 years of its discovery. Thus it’s a rational choice of first as well as the ideal choice in any rational anti-diabetic combination therapy.

In combination with metformin, acarbose has been shown to improve long-term glycemic control. Both are associated with beneficial effects on hyperglycemia, hyperinsulinaemia, body weight, and, in some studies, triglyceride levels. Acarbose and metformin both are associated with GI side effects which can be minimized by gradual titration of the fixed dose combination and administering the combination with water with first bite of meal. There is improved glycemic control without weight gain and hypoglycemia. In the current issue Jayaram et al in an Indian open multicenter study show that a fixed dose combination of Acarbose and Metformin, drop of glycosylated Hb by around 1.76% compared to Metformin alone to around 1.06%. It also illustrates the greater prandial and fasting glucose drop indicating the inbuilt GLP-1 like activity which may be promoted by both these agents. This phenomenon of better glycemic response with Alphaglucosidase inhibitors like Acarbose in high carbohydrate population merits further study. This study highlights fixed dose combination of acarbose and metformin and has beneficial effects on hyperglycemia, hyperinsulinaemia, body weight, and, triglyceride levels in early diabetes. Both acarbose and metformin may have synergistic effect in reducing cardiovascular complications and may help to improve patient compliance and glycemic control. We need to do more randomized controlled studies addressing these prandial issues especially in the Indo-Chinese populations as they may have direct impact on favorable cardiovascular outcomes.

References