1. INTRODUCTION

Diabetes mellitus is a chronic metabolic disease characterized by hyperglycemia which may be due to the disturbances of carbohydrate, fat and protein metabolism. It is associated with an absolute or relative deficiency in the secretion and/or action of the insulin. In people with diabetes, blood sugar levels remain high. This may be because of insulin is not being produced at all, is not released in sufficient quantity, or is not as effective as it should be. The most common forms of diabetes are type 1 diabetes (10%), which is an autoimmune disorder, and type 2 diabetes (90%), which is associated with obesity. Gestational diabetes is a form of diabetes that occurs in pregnancy, and other forms of diabetes are very rare and are caused by a single gene mutation (WHO Consultation 1999).

This increase in diabetes, results from multiple factors involved in lifestyle changes related to modern life such as the decrease in physical activities and the predominance of hypercaloric diets and the resulting obesity. Also playing a major part is the aging process of the population in developing countries. Diabetes increases the risk of premature death mainly due to an increased risk of cardiovascular events, visual problems and renal disease as well as undergoing lower-extremity amputation. In addition, diabetic patients are 3 to 4 times more likely to develop coronary artery disease or suffer from a cerebrovascular morbidity and mortality as compared to non-diabetic persons, and 17 times more likely to develop chronic renal failure. Unfortunately chronic complications of the disease show a rising trend among diabetics living longer (Harris et al 2000).

Diabetes mellitus is now recognized as serious global health problem. Diabetes mellitus is rapidly evolving as the epidemic of the 21st century. The incidence of diabetes mellitus is increasing worldwide and rapidly assuming epidemic proportions. The current prevalence of 150 million persons worldwide is projected to increase to 220 million by 2010 and to 300 million by 2025. India leads the world with the largest number of diabetic patients earning the dubious distinction of being termed the “diabetes capital of the world”. According to the Diabetes Atlas 2006 published by the International Diabetes Federation, the number of people with diabetes in India currently around 40.9 million is expected to rise to 69.9 million by 2025 unless urgent preventive steps are taken. (International Diabetes Federation 2007, king 1998)
Treatment of type-I diabetes comprises insulin therapy & type-II with oral hypoglycemic (like sulfonylurea, biguanides, α-glucosidase inhibitors etc) in the initial phases & then a combination of insulin and oral hypoglycemic in the later phase. Main draw back is that all of these available medicinal agents keep blood sugar level in normal range for only few hours and they have many side effects. So we should have to find other alternative therapy.

Hypertension is an extremely common condition in diabetes affecting approximately 20-60% of patients with diabetes, depending on obesity, ethnicity and age. Hypertension substantially increases the risk of both macrovascular and microvascular complications. Macrovascular complications include coronary artery disease, peripheral vascular disease, atherosclerosis, myocardial infarction, stroke and gangrene whereas microvascular complications include small vessel diseases such as retinopathy, neuropathy and nephropathy. (Verdecchia et al 2004)

Insulin resistance plays a causal role in hypertension and atherosclerosis, and thus is present to some degree in most patients with these diseases. About 50% of hypertensive individuals are hyperinsulinemic, and up to 75% of people with type 2 diabetes have hypertension. Abnormal glucose metabolism is seen in approximately two of three patients presenting with an acute coronary syndrome. In the milieu of insulin resistance, the cardiovascular system is sensitized to the adverse trophic effects of the renin angiotensin aldosterone system (RAAS) and as evidenced by the frequent occurrence of diffuses arterial disease and left ventricular hypertrophy in diabetic patients, even when the lipid and blood pressure levels are normal. High insulin levels stimulate the angiotensin I receptor, which activates the RAAS and also increases cardiac sympathetic nervous system function.

As diabetes and hypertension frequently coexist, it is useful to have an antihypertensive drug which does not alter the carbohydrate tolerance adversely. Thiazides and diazoxide have been reported to cause hyperglycemia. Propranolol and gaunethidine are known to potentiate the hypoglycemic effects of insulin and oral hypoglycemic agents. (Alderman et al 2008),

Several studies have shown that ACE inhibitors and Angiotensin receptor blockers decrease the incidence of new-onset type 2 diabetes. However, it is not known whether drugs that block the renin–angiotensin system reduce the risk of diabetes and cardiovascular events in patients with impaired glucose tolerance.
Furthermore, the exact role of these agents in diabetes prevention has not yet been fully elucidated.

Beta-blockers have been convincingly shown to reduce total and cardiovascular morbidity and mortality in hypertensive diabetic patients. After myocardial infarction these agents confer a twice as high protective effect when compared to nondiabetic patients. The unnecessary less frequent prescription of beta1-selective beta-blockers in diabetes mellitus contributes to the higher cardiovascular mortality in these patients. Beta-blockers have been reported to adversely affect the overall risk factor profile in the diabetic patient. (Bangalore et al, 2007) In contrast, calcium antagonists, angiotensin converting enzyme inhibitors and angiotensin receptor blockers have been reported to be either neutral or beneficial with regard to the overall metabolic risk factor profile. Combination therapy is usually required to achieve blood pressure goal in diabetic patients.

The effects of different classes of antihypertensive drugs on incident of diabetes mellitus remain controversial. Therefore, we undertake to assess the effects of antihypertensive agents on diabetes mellitus.