Introduction

Diabetes mellitus is a disease of metabolic disorders characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both **(Saltiel and Kahn, 2003)**. There is no doubt glucose homeostasis in the body depends on the balance between glucose production and glucose utilization. Glucose production occurs predominantly in liver, whereas glucose utilization occurs in insulin-dependent tissues, such as the muscle and adipose tissues. Furthermore, in insulin-independent tissues such as the brain, kidney and red blood cells **(Hancock, 2001).** Despite the great efforts that have been made in the understanding and management of diabetes, the disease and disease related complications are markedly increased **(Tiwari and Madhusudana, 2002)**.

During diabetes, persistent hyperglycemia causes increased production of free radicals especially reactive oxygen species (ROS). It is produced in all tissues from glucose auto-oxidation and protein glycosylation **(Bouktaib et al., 2002)**. Although these free radicals are generated as by-products of normal cellular metabolism, imbalance between radical-generating and radical-scavenging systems may occur. This may result in cell dysfunction and destruction resulting in tissue injury **(Michael, 2006).** The increased free radical production, lipid peroxidation and diminished antioxidant activity are detected in oxidative stress **(Baynes, 2003)**.

Recent studies detect the beneficial effect of antioxidants specially Quercetin in insulin-resistant diabetic patients **(Janisch et al, 2004)**. Frankly, it is impossible to reverse diabetic complications completely. So, the main target is to prevent or attenuate the adverse effects of chronic

hyperglycemia. Using of antioxidants such as Quercetin could be useful **(Gorogawa, 2002)**.

Quercetin is one of Flavonoids antioxidants which are phenolic phytochemicals. They are important constituents of the non energetic part of the human diet. They are thought to promote optimal health, partly via their antioxidant effects in protecting cellular components against reactive oxygen species **(Hertog and Hollman, 1996)**. It is one of the most widely distributed flavonoids. It is present in fruit, vegetables, and many other dietary sources (**Pawlikowska et al, 2003)**. As Quercetin accounts for most of the flavonoids consumed but less data are known about it, many studies try to detect its beneficial effects **(Graefe et al., 2001)**. Quercetin has a very important role in disease prevention. It protects against cardiovascular disease as People with high intakes of dietary Quercetin have lower death rates from ischemic heart disease (**Knekt et al., 2002)**. They also have reduced blood pressure **(Szkudelski, *2001*) :)** and the lower risk of stroke **(Erden and Kahraman 2000).**