Exploring the therapeutic role of epicatechin in diabetes: a review

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Abstracts

Diabetes mellitus develops as a result of prolonged insulin resistance and insufficient insulin production. The significance of this review is to highlight the importance of the usage of natural products as an alternative for the treatment of diabetes. There is several antidiabetic agents are available having many side effects and other secondary complications thus there is a need to find the alternative add on therapy to treat diabetes. Epicatechin due to its potent antioxidant activity as well as effective against lipid peroxidation and free radical scavenging and thus alter many metabolic and physiologic process and found to be effective against diabetes due to its glucose lowering and improving β-cell regeneration. Epicatechin can be used as an add-on therapy for the management of diabetes mellitus. Evidence of antidiabetic effect of Epicatechin is being identified for future therapy to treat diabetes. The significance of this review is to highlight the importance of the usage of natural products as an alternative for the management of diabetes.This review will discuss the role of Epicatechin on oxidative stress,endoplasmic reticulum stress, mitochondrial dysfunction, activation of redox pathway and inflammation.

Key words: Epicatechin, diabetes mellitus,antidiabetic agents, insulin sensitivity, Oxidative stress, β cell regeneration, inflammation

1.Introduction

Diabetes mellitus refers to a group of chronic metabolic disorders which are generally characterised by hyperglycemia, which eventually leads to damage of multiple body systems. Diabetes is classified into two types, type 1 (T1DM) and type 2 (T2DM) diabetes mellitus. T1DM is referred as insulin-dependent diabetes mellitus (IDDM) and is caused by the impaired insulin production. T2DM, on contrary, is frequently associated with cells inability to respond to insulin or insulin resistance, hence referred as non-insulin dependent diabetes mellitus (NIDDM). Epicatechin is natural flavanol mainly found in cocoa, tea, peanuts, grapes and other berries [1]. Several beneficial effects are shown by consumption of food rich in Epicatechin[2]. Among various phytochemicals phenolic compounds are most commonly used because of their safety and efficacy[3].

2.Efficacy of Epicatechin in diabetes:

Ahmad, F. et al have determined the antidiabetic effect of water extract of the bark of plant *Petrocarpus marsupium* containing Epicatechin, its active principle. In vitro study suggest insulin like activities of Epicatechin which stimulate oxygen uptake in fat cells and tissue slices of various organs [4]. A study by Rizvi SI. et al has revealed that in vitro effect of insulin and Epicatechin on the reduced glutathione content in normal and type 2 diabetic