TEA AND DIABETES

Abstract

Since time immemorial, tea (Camellia sinensis) has been consumed regularly around the world. The three main types of tea are: oolong tea (2%), 20-22% green tea, and 76-78% black tea. Flavonoids which are polyphenolic chemicals, are particularly abundant in tea. The active component of tea that is responsible for beneficial effect in T2DM and metabolic syndrome is Catechin, a polyphenol. Catechin constitute 7 forms, including Epigalocatechingallate (ECGg). It has been demonstrated that black tea, when ingested in a healthy way as a supplement, can stop the progression of T2DM and metabolic syndrome in addition to providing other health advantages.

Keywords: Black Tea, Metabolic Syndrome, T2DM, Insulin Resistance

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I. INTRODUCTION

Since the advent of human population, use of medicinal plants in disease remediation have been well known and documented. Utilizing plant sources rich in nutraceuticals and phytonutrients as therapeutic agents to treat a wide range of human illnesses has long been a practice that has acquired enormous popularity. India, with her nurturing, approximately 4000 species of medicinal plants, is a treasure trove of herbs, spices, and medicinal plants. One of the most consumed beverages worldwide is tea, particularly in Asian nations such as the Korean peninsula, China, Japan, and India. Due to the high rate of consumption in this group, even a minor change could have a significant influence on public health.

II. DIABETES AND ITS BURDEN

T2DM is a metabolic condition marked by chronic hyperglycaemia brought on by a problem with insulin production, action, or both. In order to stop the emergence of T2DM, it is important to target deficiencies in insulin resistance and beta-cell activity. Nearly 463 million people all around the world are living with diabetes. The International Federation estimates that there will be 578 million adults with T2DM by 2030 and is projected to have 783 million by 2045. India currently has a total of 77million people with T2DM. The impact of Diabetes leads to a huge economic burden on society in a developing nation like India. Steady rise in prevalence of T2DM has been due to growing urbanization and changing lifestyle habits. Poor diet, obesity, physical inactivity, smoking, and alcohol use are all significant risk factor. Genetic predisposition is unlikely to change, so the scope and feasibility for primary prevention of T2DM are based on changes in environmental factors.

III. INFLAMMATIONS AND DIABETES

In last few years, low grade inflammation and chronic subclinical inflammation is associated with increased propensity for developing type 2 diabetes. Numerous observational studies have shown that 5-10% of pre-diabetics develop diabetes annually. The fact that inflammatory indicators predict the development of diabetes and metabolic diseases are further supported by recent epidemiological studies. TNF- and IL-1B, two important pro-inflammatory cytokines, have been implicated in the etiology of T2DM and obesity-related insulin resistance.

IV. EVIDENCE FROM CLINICAL TRIAL

Evidence from a number of clinical and epidemiological research suggests that drinking black tea on a regular basis may lower postprandial blood glucose and lessen pro-inflammatory stress through changing the levels of particular cytokines. It also lowers the risk of occurrence of type 2 diabetes mellitus and may even prevent progression. Black tea's impact on nine pre-diabetic patients with metabolic disorders was examined by Chatterjee et al. in a recent study. Their findings showed that drinking black tea dramatically reduced levels of serum lipid peroxides, pro-inflammatory cytokines (TNF alpha, interleukin 1 beta), and elevated levels of anti-inflammatory cytokines (IL-10). In the study done by Lisa Striegel et al, the authors had seen the inhibitory property of black tea and black tea extract on carbohydrate hydrolysing enzyme namely alpha glucosidase as well as their antioxidant property. Another study by Yali Jing et al, indicates that consumption of black tea of more

than 3 cups per day may lower the risk of type 2 diabetes. However, they were unable to point out the exact reasons. According to a recent study by Chandrima das et al, tannins, which are found in tea, play a role in enhancing glucose absorption and inhibiting adipogenesis. Tea phytochemicals such polyphenols, methylxanthines (mostly caffeine), and L-thianine contribute to the beverage's neuroprotective, anti-oxidant, and anti-diabetic characteristics, which help with T2DM-related issues and shield the brain from oxidative damage.

V. CONCLUSION

Consuming black tea in moderation appears to reduce the levels of risk variables that are separately associated to T2DM, obesity, and cardiovascular disease.

The synergistic effects of tea phenolics and other antioxidant components are primaril y responsible for the positive effects of black tea.

Black tea may be a significant dietary source of antioxidants for humans and appears t o haveprotective effects against several metabolic illnesses, though the underlying molecular pathways for these effects deserve further in-depth research.

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