IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, December 2025
Impact Factor: 7.67

Green Tea: A Magical Herb with Miraculous Outcomes

Suraj Bhagwan Khirodkar and Mr. Vinod Chavre
Satyajeet College of Pharmacy, Mehkar, Buldhana, Maharashtra

Abstract: *Green tea, derived from the leaves of Camellia sinensis, is one of the most extensively consumed beverages worldwide and has attracted remarkable scientific interest due to its diverse pharmacological actions. Unlike black and oolong tea, green tea is produced by minimal oxidation, preserving a rich profile of polyphenolic compounds, particularly catechins such as epigallocatechin-3-gallate (EGCG), epicatechin (EC), epigallocatechin (EGC) and epicatechin gallate (ECG). These bioactive constituents are associated with powerful antioxidant, anti-inflammatory, cardioprotective, neuroprotective, antidiabetic, anti-obesity and anticancer effects, as well as benefits in oral health, dermatology and metabolic syndrome. Green tea catechins modulate multiple molecular targets including oxidative stress pathways, inflammatory mediators, lipid and glucose metabolism, endothelial function and diverse cell signaling cascades. Epidemiological studies and meta-analyses suggest that habitual green tea consumption is linked to reduced risk of cardiovascular disease, improved lipid profiles, better glycemic control and potentially lower incidence of certain cancers and neurodegenerative disorders.*

Despite its reputation as a "magical" health beverage, green tea is not free from limitations. High-dose green tea extracts and concentrated catechin supplements have been associated, in rare cases, with hepatotoxicity, highlighting the importance of dose, formulation and individual susceptibility. This review summarizes the phytochemistry of green tea, its major pharmacological activities, clinical evidence for health benefits, safety considerations and future prospects for its rational therapeutic application. Emphasis is placed on EGCG-driven mechanisms and the translation of experimental findings into clinically meaningful outcomes. Overall, when used in physiologically relevant and safe doses, green tea can be considered a promising functional beverage and adjunctive nutraceutical with multidimensional health-promoting potential.

Keywords: Green tea; *Camellia sinensis*; Epigallocatechin-3-gallate (EGCG); Catechins; Antioxidant; Cardiometabolic health; Neuroprotection; Hepatotoxicity; Nutraceutical

Copyright to IJARSCT
www.ijarsct.co.in

DOI: 10.48175/IJARSCT-30350