Study of anticoagulant properties in Camellia sinensis (green tea)

Umair Ramlan, Sakinah Mohd Razali

Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia, 71800 Bandar Baru Nilai, Negeri Sembilan, Malaysia

ABSTRACT

Introduction: Tea is a historically familiar substance that is the second most consumed beverage after water. Camellia sinensis (L.) O. Kuntze (green tea) is a non-fermented type of tea that has been found to have higher catechin compared to other types of tea. Green tea is thought to bear various health benefits, one of which is its potential effect on haemostasis and thrombosis. Among its polyphenols, epigallocatechin gallate (EGCG) and epicatechin (EC) have been studied on their effect towards blood coagulation. **Materials and Methods:** This study employed a narrative literature review to investigate the anticoagulant properties of Camellia sinensis (green tea). Relevant research articles were identified through comprehensive searches in electronic databases, including PubMed, Google Scholar, ScienceDirect, and Scopus. Keywords such as "Camellia sinensis," "green tea," and "anticoagulant" were used to retrieve studies published in English. Only studies that were experimental, clinical, or review articles examining the effects of Camellia sinensis or its active compounds — specifically epicatechin (EC) and epigallocatechin gallate (EGCG) — on haemostasis, platelet function, and coagulation parameters were included, while studies involving other types of tea, and sources lacking proper references or supporting links were excluded. **Results:** Anticoagulant potential of compounds in Camellia sinensis is found particularly in its epicatechin (EC) and epigallocatechin gallate (EGCG) compounds. EGCG demonstrated significant antiplatelet effects by reducing platelet aggregation via inhibition of ADP, P-selectin, phospholipase C, and thromboxane A2, though it did not significantly affect coagulation times such as PT or aPTT. In contrast, EC showed both antiplatelet and anticoagulant properties, significantly reducing platelet aggregation, thrombin potential, and clotting times, while also enhancing fibrinolysis. **Conclusion:** Camellia sinensis contains natural compounds that may help prevent blood clots. One compound, EGCG, helps stop platelets from clumping together but does not affect blood clotting time. Another compound, epicatechin (EC), has both antiplatelet and anticoagulant effects — it can reduce clot formation and help break down clots. This shows that green tea, especially EC, may be useful for heart health. However, more studies are needed to confirm how effective and safe it is before using it as a treatment.

Keywords: Camellia sinensis, green tea, anticoagulant