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CAMELLIA SINENSIS: PHARMACOLOGICAL PROPERTIES AND DRUG INTERACTIONS

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ABSTRACT

Green tea is produced without fermentation from the leaves of *Camellia sinensis* belonging to Theaceae family. Black tea or red tea is processed by fermentation and heating, whereas oolong tea is partially fermented. Green tea contains more catechin than black tea and oolong tea. The presence of high amounts of catechins, essential minerals and vitamins are responsible for high antioxidant potential of this tea. Tea contains 5% caffeine and 24% tannins with minor amounts of other xanthines such as theophylline and theobromine. Its tea also contains flavonoids. Green tea appears to contain greater quantities of the flavonol-type flavonoids than black tea. Minor flavonols (10%), polymeric flavonoids (20%) and epigallocatechin-3-gallate (EGCG) are the major constituents of about 50-80% of the green tea catechins. Leaf buds and fresh tea leaves are used as stimulant and diuretic due to its caffeine content. Also they are used as an astringent for gastrointestinal disorders which they effect via polyphenols and tannins they contain. In addition, green tea extracts are used in the treatment of genital warts. Tea is generally preferred as a drink. Green tea extract is a rich polyphenol source. The phenolic components of green tea extract have strong antioxidant activity. The combined use of green tea with hydrochlorothiazide (HCTZ) showed myocardial protection by reducing the adverse effects of HCTZ. This finding may be important for cancer patients with hypertension and ischemic heart disease who can not undergo HCTZ monotherapy due to potential myocardial side effects. A study in rats has shown that green tea reduces myocardial toxicity induced by cyclofosfamide in a dose dependent manner. Adenosine is used for arrhythmia and green tea may inhibit the effects of adenosine. Caffeine found in green tea reduces the sedative effect of benzodiazepines. Also, it can increase blood pressure in patients using metoprolol and propranolol. Patients using warfarin should not use green tea. Moderate quantities of K vitamin in green tea can reduce the effect of warfarin. Green tea and aspirin should not be used together because they both increase the risk of bleeding by acting as an inhibitor on the platelets that provide clotting. Laboratory tests involving the use of green tea in combination with chemotherapeutics such as doxorubicin and tamoxifen have been shown to improve the efficacy of these drugs. It has been shown that green and black tea extracts decreases the sensitivity of prostate cancer cell to chemotherapy drugs. Because of this potential for interaction, black and green tea (extracts of these teas) are not recommended especially for patients who receive chemotherapy for prostate cancer. If clozapine is used less than 40 minutes after green tea ingestion, the antipsychotic effect may reduce. If green tea is used in combination with ephedrine, it can increase agitation, tremor, insomnia and weight loss. Green tea has been shown to reduce lithium blood levels. The use of green tea with monoamine oxidase inhibitors such as phenelzine and tranylcypromine may cause a hypertensive crisis. The combination of phenylpropranolamine and caffeine can result with serious increase of blood pressure and mania. Clinical trials have showed that green tea and black tea

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