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Oral health and white tea

Sir,

Tea is an infusion of the leaves of the *Camellia sinensis* plant and is the most widely consumed beverage in the world, aside from water. All teas are derived from the leaves of *Camellia sinensis*, but different processing methods produce different types of tea. Although there are thousands of tea varieties, they may be divided into three main groups based on the amount of oxidation they undergo during processing namely White and Green Tea; Oolong (Wulong) Tea and Black Tea with minimum oxidation in white tea and maximum in black tea.[1]

White tea is made from buds and young leaves, which are steamed or fired to inactivate polyphenol oxidase and then dried. Thus, due to minimal oxidation, white tea retains the high concentrations of catechins present in fresh tea leaves.[2]

Studies show that 2-4 cups of white tea a day yield greater health benefits than only one cup. To stretch tea supply, resteep the leaves once or twice to extract all the nutrients.

White tea consists of mainly fluoride, tannins and flavonoids. The bio-availability of fluoride from tea in relation to its interaction with the tooth surface and oral tissues was 34% after rinsing with tea, which can be beneficial for reducing caries. It has been reported that the tannins in tea can inhibit salivary amylase thereby reducing the cariogenic potential of starch-containing foods. A number of studies have also demonstrated that tannic acid inhibits the growth of S. mutans bacteria, a major factor in the build-up of dental plaque. In addition to its beneficial effect on plaque, tannin, along with other components of tea such as catechin, caffeine and tocopherol have been shown to be effective in increasing the acid resistance of tooth enamel.[3] Specific flavonoids, mainly catechins, have exhibited inhibitory effects on the growth of cariogenic bacteria by preventing the adherence and growth of plaque bacteria at the tooth surface. However, there is more, in fact, white tea has been shown to boost the immune system of the body as it helps the body to fight viruses and bacteria that cause dangerous infections due to the antioxidant action of flavonoids.[3]

Mitoshi Kushiyama and Yoshihiro Shimazaki conducted a study on 940 Japanese men aged 49 to 59 years to establish a relationship between the intake of green tea and periodontal disease. The daily intake of green tea was significantly associated with periodontal disease, such that the more frequently the subjects drank green tea, the better was their periodontal condition. This may be because the green tea catechin inhibits the growth of Porphyromonas gingivalis, Prevotella intermedia and Prevotella nigrescens and the adherence of P. gingivalis onto human buccal epithelial cells. In addition, green tea catechins with the steric structures of 3-galloyl radial, EGCg, (-)-epicatechin gallate (ECg) and (-)-gallocatechin gallate, which are the major tea polyphenols, inhibit the production of toxic end metabolites of P. gingivalis.[4]

Flavonoids and polyphenols, class of antioxidants, inhibit the growth of cancer cells and prevent the development of new ones, and contribute substantially to the cancer preventing effects of tea. One double-blind, randomized intervention trial suggested that treating patients with a mixture of black and green tea components could improve the clinical manifestations of precancerous oral lesions.[5]

Another study investigating the effect of tea as a chemopreventive agent in precancerous lesions (oral leukoplakia) has also found positive results. Eighty two subjects with oral leukoplakia received black tea in a fixed regimen for a year. Preliminary results on the first 15 patients who first entered the study have shown a clinical improvement.[6]

A pilot study showed that heavy smokers who consumed 5 cups of green tea a day for four weeks reduced the number of damaged cells in the mouth. The authors concluded that these results warrant a large scale intervention trial to further verify the role of green tea in the prevention of oral cancer in smokers.[7]

A trial by Carter Oriana –"Comparison of White Tea, Green Tea, Epigallocatechin-3-Gallate, and Caffeine as Inhibitors of PhIP-Induced Colonic Aberrant Crypts" has revealed that white tea, caffeine and EGCG may be most effective post-initiation, via the inhibition of cell proliferation and through the suppression of early lesions.[8]

So, there is a growing amount of *in-vitro* research identifying tea's potential oral health benefits. However, further longer term, well controlled human trials are required as tea is being consumed by a wide range of population.

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