

## SPECIAL EDITORIAL

Tea, made from dried leaves of the plant *Camellia sinensis*, is a popular beverage consumed globally. It has been consumed for more than 5000 years across the globe. There is a long history of association of tea and health. A strong epidemiological link has been observed between tea consumption and lower risk of heart disease, cancer, obesity and so on. Though in most of the cases, the cause and effect relationship has not been demonstrated but significant work has been done to understand the possible mode of action *in vitro*.

The most common types of tea being consumed are black tea and green tea. They represent about 98% of global tea consumption. Green tea is manufactured by drying plucked tea leaves and it contains mostly monomers of catechins (~70%). EGCG is the most abundant catechins and has by far received most attention. On the other hand, during the manufacturing of black tea, the tea leaves are crushed to allow the polyphenol oxidase to catalyse the oxidation, leading to polymerization of catechins to oligomers like theaflavin, thearubigin etc. These molecules are responsible for colour, taste and some of the health benefits for black tea. In addition, a cup of tea also contains theanine, polysaccharide that are also responsible for certain health benefits.

Recently, studies have been carried out to evaluate the causative molecule(s) for multiple health benefits. Both human and animal studies supported by *in vitro* experiments demonstrated that the poly-phenols are mainly associated with reduction of cardiovascular disease, weight management, diabetes and anti-inflammatory benefits. One of the mechanisms to support this systemic health benefit like cardiovascular disease by tea is the release of Nitric oxide (NO) through activation of eNOS in endothelial system.

Recent literature suggests similar health efficacy between Green tea and Black tea especially for CVD though the extent of literature available on black tea is relatively less. In addition to systemic disorders, tea has also been shown to improve oral conditions like disease includes dental caries and periodontal disease through its anti-inflammatory and anti-microbial activity. Several mechanisms have been proposed to support the anti-microbial and anti-inflammatory benefit of tea in oral context. Recently extensive research is on going on effect of tea on skin as well. It has been demonstrated by various researchers across the globe that tea has positive effect on skin health, e.g. anti-ageing, anti-inflammatory, anti-oxidant and so on.

In addition, Black tea has also been shown to improve immunity against infections and increase resistance to disease by one of its component theanine. Theanine can activate  $\gamma\delta$  T cells and thereby impart resistance to bacterial infection in human and animal. This has also been clinically proven in multiple human trials.

Probably the most widely investigated area on tea and health is the linkage between tea consumption and reduction of cancer risk. This has been demonstrated in multiple animal models that include cancers of the lung, skin, stomach, liver, intestine, colon and so on. In spite of variability in the results obtained from human trials, majority of the literature support the beneficial effect of tea on cancer. The consumption of tea is also associated with different life styles in various regions and it is possible that variable results on tea and cancer may be due to diverse etiological factors present in the tested population.

To summarize, tea is a wonder beverage. Regular consumption of tea provides significant health benefits spanning all aspects of health. This is a small offering to all the tea lovers of the past, present and the future generation. Thanks.

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