

Comparative Study on the Effect of Sweeteners on the Oxidative Status of Green Tea and Black Tea

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Both green and black tea are known by the consumers for their chemical composition rich in polyphenols – substances with an important antioxidant effect, proofing the capacity to fight against free radicals and to strengthen the immunity system. In order to improve the sensorial characteristics of green and black tea, the main food additives used are natural and synthetic sweeteners. Knowing how to choose the best sweetener for organic green and black tea is a duty of any specialist in this field, in order to improve the capacity to make nutritional recommendations – taking into consideration the different health level of the consumers (especially the ones with diabetes or cardiovascular symptoms or diseases, digestive or hormonal problems or allergies). The present paper shows a personal method for finding of the best synthetic or natural sweeteners that can be used for sweetening the organic green or black tea coming from areas without any contamination. This method allows the selection of optimal sweetener by monitoring the oxidative status of internal and external environment for green and black tea.

Keywords: green tea, black tea, sweeteners, coenzymes (NAD, FMN)

The tea is most widely consumed beverage in the world, next to water. In U.S.A. (bigger consumption in world) the tea consumption is grouped in black tea (85%), green tea (14%) and others (1%). Today, around the world, 15 000 cups of tea are consumed in every second; black tea is the favourite tea assortment: 78% of world consumption, at the same time, green tea is preferred by 20% of world consumers [1]. Standard amount of caffeine in a cup of green tea is around 35-80mg/100g (one cup), in black tea is around 90-110 mg/100g; in average cup of coffee will get about 110-130 mg/100 g caffeine [2].

Green tea is a type of tea obtained from leaves unfermented by *Camellia sinensis*. In this type of tea, the post harvest natural fermentation process is stopped (a major difference from black tea). Green tea differs from the black one by way of preparation, content of substances, taste and produced effects.

The used technologies in tea industry are shown in figure 1 [3].

Both, in green tea and black tea will be comparable quantities of epicatechin, catechin, and epicatechingallate. In addition, in the green tea will be larger amounts of gallic acid, gallocatechin gallate, kaempferol, myricetin, quercetin, and rutin, than in black tea [4]. Green tea contains several catechins, but the polyphenol with the highest anticancer activity of all is EGCG or gallate epagalocatechin [5]. Polyphenols of green and black tea attenuate blood pressure increases due to their antioxidant properties [6].

The principal reasons for should drink more green tea can be grouped: the teas of all varieties contains high levels of antioxidant (polyphenols), drinking tea in place of light calorie beverages can help people lose weight, despite the caffeine, green tea can help keep people hydrated (through hydrating the body) [7]. Recently, some epidemiological studies have indicated that drinking green tea slightly reduces blood pressure. 120 mL of green tea consumed per day for 1 year significantly reduces the risk of developing hypertension [8]. Black tea can also expand the airways and making breathing easier for asthmatics [9].

To improve sensory characteristics of green tea and black tea are commonly used natural sweeteners or synthetic sweeteners and these must be chosen carefully because using them singly or together with other food additives can lead to severe illness [10].

The green tea and black tea are different limits of maximum admissible concentrations for certain metals in green and black teas: from China, India, Pakistan, Brazil (different limits according to the legislation of these tea producing countries) [11].

To highlight the occurring changes in the oxidative status of green and black teas, to determine how the antioxidant potential of these can improve the nutritional characteristics



Fig. 1. The used technologies in tea industry (Typical sequences of green and black tea manufacturing in South East of Asia) [3].

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