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Analysis of Various tea Samples

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ABSTRACT

Tannins are water-soluble polyphenols that are present in many plant foods. The aim with this study was to give an overview on the amount of tannin present in various tea samples. A simple and accurate complexometric method is used to determine tannin. Most of the ingredients commonly found in tea samples do not interfere with the determination. Several tea samples were analysed for their tannin content in present study.

Keywords : Tea, Tannin, Polyphenolic Compounds, Calcium Tannate

I. INTRODUCTION

After water, tea is the most widely consumed beverage in the world. It has a cooling, slightly bitter, and astringent flavor that many people enjoy. Tea likely originated in China as a medicinal drink [1]. Tea beverage is prepared by pouring boiling water over processed tea leaves, of the tea plant, *Camellia sinensis* [2]. It was first introduced to Portuguese priests and merchants in China during the 16th century. Drinking tea became popular in Britain during the 17th century. The British introduced it to India, in order to compete with the Chinese monopoly on the product [3]. Tea is valued for its taste, aroma, health benefits, and form part of some cultural practices. Through the ages, tea consumption was associated with beneficial effects on human health. Most of the health-promoting effects of tea are attributed to its polyphenolic compounds and their antioxidant activity. Tannins play an important role and has wide applications. Tannins are water-soluble polyphenols that are present in many plant foods. Recent findings indicate that the major effect of tannins was not due to their inhibition on food consumption or digestion but rather the decreased efficiency in converting the absorbed nutrients to new body substances [4]. The anticarcinogenic and antimutagenic potentials of tannins may be related to their antioxidative property, which is important in protecting cellular oxidative damage, including lipid peroxidaton. The antimicrobial activities of tannins are well documented [5,6]. This study was conducted to estimate tannin content in commonly available tea samples in India.

II. METHODS AND MATERIAL

The data for the present work comprises all in all 05 samples out of which 4 samples are drawn from different brands of black tea available in India and one is green tea sample.(Sample-1:Red Label, Sample-2:Packed Local Brand, Sample-3:Assam tea, Sample-4: Loose Tea Powder, Sample-5: Lipton green tea.

Procedure: 5gm of tea powder were mixed with 150ml water and heated up to extreme boiling. The solution was filtered and filtrate was treated with calcium carbonate a curdy brown precipitate was obtained. It was filtered again and the filtrate was boiled until it was reduced to 50ml. Calcium tannate is then hydrolyzed with Conc. H_2SO_4 and recrystallized from water [8]. It is dried and weighed. The procedure was repeated with all the tea samples.

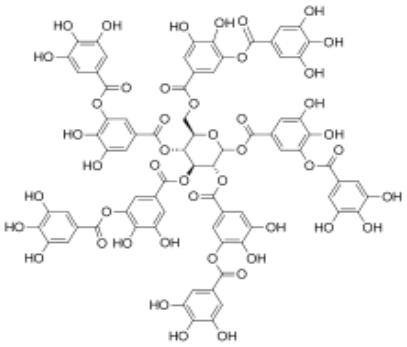

Fig 1 : Tannin, a type of polyphenol

III. RESULTS AND DISCUSSION

The results of tannin estimation in different brands of tea samples are set out in **Table No. I.** A glance at this table indicates the presence of slight variation in tannin content between different sets of tea samples studied. Since variability of tannin content depends on factors such as variety of tea, location, time of plucking, age of leaves, the particles size and other agro-climatic conditions of tea plantation, it is therefore reasonable to pressure that the above factors might account for the observed variation in the tannin content in different groups of tea samples during the present study.

Table I : Tannin content in various tea samples

Brand Name	Weight of tea powder taken in g	Weight of Tannin in g	% of Tannin Present
Tea Sample 1	5	0.64	12.8
Tea Sample 2	5	0.71	14.2
Tea Sample 3	5	0.59	11.8
Tea Sample 4	5	0.62	12.4
Tea Sample 5	5	0.14	2.8

IV. CONCLUSION

In the present study different tea samples were analyzed and compared for their tannin content. The tannin contents were studied and it was found that it varies from 2.8-14.2%. Lowest tannin content was observed in green tea as compared to black tea. Since variability of tannin content in different black tea depends on factors such as variety of tea, location, time of plucking, age of leaves, manufacturing, the particles size and other agro-climatic conditions of tea plantation.

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