

Estimation of Secondary Metabolites in Different Tea and Coffee Brands of Indian Market

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Abstract: *In present study, different tea and coffee brands were analyzed and compared for their phenol, tannin and caffeine content. The product having highest phenol contents was Red label (21.8%). The products having least tannin contents were; Red label (2.6%), Parivar (1.08%). Remaining product as: Tata agni, bru and Nescafe showed almost same percentage of tannins in range 2.8%-3.0%. Among various tea and coffee brands, Nescafe had maximum quantity (3.0%) of tannin. Parivar was containing highest quantity (4.2%) of caffeine among all the studied products*

Keywords: Coffee, Indian markets, Secondary metabolites, Tea

1. Introduction

The term 'Secondary metabolites' covers a wide range of naturally occurring compounds of varying structure scattered widely throughout the vegetable kingdom. Apart from that, phenols, Tannins, and alkaloid, routinely used to give antioxidant and antimicrobial activities.² They are also used as antiseptics and astringents. In India, cup of tea or coffee, is the start of morning even though no person found who never taste the tea or coffee. Taking this advantage, most of the brand made the place in Indian market. Keeping in view these effects, this study was conducted to estimate phenol, tannin and caffeine content in commonly used tea brands in India. Indian tea industry has recorded the highest ever production as well as exports in FY18. The total tea production was 1325.05 million kgs, an increase of 74.56 million kgs as compared to 2016-17. In percentage terms the increase is around 6%. and The coffee production in FY 2017-18 is estimated at 316, 000 million tonnes (MT), as against 312, 000 million tonnes in FY 2016-17. Over April 2017-March 2018 (provisional), coffee exports from India stood at 267, 510 tonnes valued at US\$652.35 million, registering a year-on-year growth of 12.70 per cent.

2. Material and Methods

The content of total phenols, Tannin, and caffeine were estimated from different brands of tea and coffee. Sample use for estimation of secondary metabolites Red label batch no Fb11 (lic no 100120430006), Parivar batch no S17290 (lic no 100611522003869), Tata agni batch no 23AA388 (lic no 1001443000804), Nescafe batch no 8073042EA (lic no 10012043000066), Bru batch no AB14 (lic no 1002356849546).

Extraction

Methanol used for extraction, 30g of powder was extracted using Soxhlet's apparatus for 6 hrs, the extract dried and kept in container for further study

Tannin Contents

Estimation of tannins in tea and coffee was performed by titrating the material with standard potassium permanganate

solution.² The concentration of tannin was estimated by using the following relationship in aqueous extracts of tea & coffee brands: 1 mL of std. KMnO₄ solution = 0.595 mL 0.1N Oxalic acid; 1 mL of 0.1 N Oxalic acid = 0.0042 g tannin

Caffeine content:

The percentage of caffeine was calculated by, method of Kokate C. K., 2002⁴

Total phenols:

The content of total phenols in methanolic extracts of tea & coffee brands was measured at 765 nm by Folin-Ciocalteu reagent.¹ The measurements were carried out using an 1800 UV-Visible spectrophotometer diode array (Shimadzu, Japan).

3. Results and Conclusion

Results of total phenols, Tannin contents, and caffeine in various tea and coffee brand are given in Table 1. Tannin decrease feed intake, growth rate, feed efficiency and protein digestibility. Therefore, food which has high tannin contents is harmful for health. The lower caffeine content in respective brands raise a question on quality. Results of the Phenol, tannin and caffeine contents in different brands of tea and coffee have been presented, are very different. It may be due to the difference in the process of manufacture or the aging of tea leaves and coffee beans. Reasons for the difference in tannin contents may be due to the difference in climate and soil texture.⁴ Tannin decrease feed intake, growth rate, feed efficiency and protein digestibility. Therefore, foods which have high tannin contents are harmful for health. The caffeine content in tea and coffee brands are within the standard limit which is 1-4.5% & 1-2.5% respectively

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Table 1: Estimation of secondary metabolites in tea and coffee

Brand	Total tannins (% w/w)	Total phenolic (% w/w)	Total caffeine (% w/w)
Red label	2.06	21.8	1.8
Parivar	1.08	20.3	4.2
Tata agni	1.3	14.1	3.2
Nescafe	3.0	21.1	1.2
Bru	2.8	16.6	1.15