



Estimation of secondary metabolites in different tea and coffee brands from Indian market

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Abstract

In present study, different tea & coffee brands were analyzed and compared for their phenol, tannin & caffeine content. The product having highest phenol contents was Nescafe (5.03%). The products having least tannin contents were: Taj Mahal tea (3.99%), Mili tea (3.99%). Remaining product as: Wagh bakri, Red label, and Nescafe showed almost same percentage of tannins in range 4.50-5.50%. Among various tea & coffee brands, Bru had maximum quantity (9.65%) of tannin. Mili tea was containing highest quantity (1.72%) of caffeine among all the studied products.

Key-Words: Secondary metabolites, Tea, Coffee, Indian markets

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. 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 content, tannin content & caffeine content in commonly used tea brads in India.

Material and Methods

The content of total phenols, Tannin, and caffeine were estimated from different brands of tea and coffee.

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).

Tannin Contents

Estimation of tannins in tea & 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., 2002.³

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, food 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

Brands	Phenol Contents*	Tannin*	Caffeine*
Tea			
Wagh bakri	3.41	9.37	0.7
Red label	4.16	9.82	1.3
Taj Mahal	2.15	7.99	1.5
Mili		7.99	1.72
Coffee			
Nescafe	5.03	9.34	1.01
Bru	4.24	9.65	1.3

References

1. Encyclopædia Britannica. (2009). Siddique N. A., Mujeeb, M., Najmi A.K. and Akram M. (2010). Evaluation of antioxidant activity, quantitative estimation of phenols and flavonoids in different parts of *Aegle marmelos*. *Afr. J. Plant Sci.*, **4** (1): 1-5.
2. *Official Methods of Analysis of AOAC International*. (1980). Association of Analytical Chemists. Arlington, USA.
3. Kokate C.K. (1994). *Handbook of Practical Pharmacognosy*, Vallabh Prakashan, 4th Ed., 136.
4. Harller C.R. (1964). *The Culture and Marketing of Tea*, Oxford University Press, London, 70-75, 87-89.