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DETERMINATION OF CAFFEINE CONTENT IN DIFFERENT COMMERCIALLY AVAILABLE TEA SAMPLES

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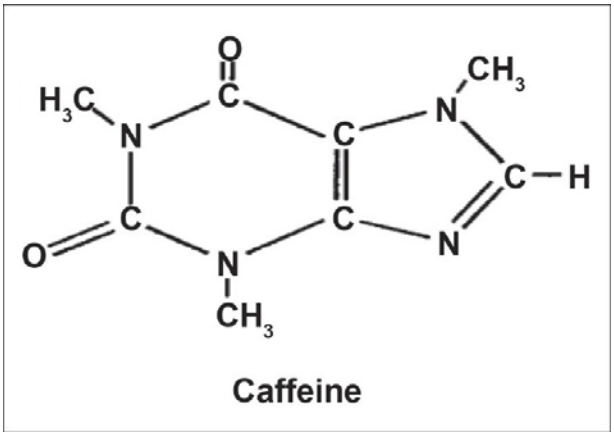
ABSTRACT

Caffeine is a natural alkaloid, which occurs in coffee, tea leaves, cola nuts etc. In the present study 6 different samples of commercially available tea powders are taken to determine their caffeine content. Caffeine is isolated from all the samples individually and the caffeine content is determined. The caffeine percentage is almost same for all the samples.

INTRODUCTION

Tea is the most popular non alcoholic beverage. Caffeine is a natural alkaloid, found in the leaves, seeds or fruits of nearly 60 plant species(1). It acts as a CNS stimulant. It increases alertness and elevates mood. It make a person addicted to it. However the consumption of it in higher amounts can cause nausea, trembling and nervousness(2). Earlier studies reported its impact on human health(3-7). So it is thought worthwhile to determine the caffeine content of different tea powders. There is an increasing demand of tea extract and other bio molecules in food industries because of antioxidant properties. The polyphenolic content of tea and also catechins increasing the interest because of their potentiality as radical scavenging compounds.



Caffeine

MATERIALS AND METHOD

The reagents lead acetate, sulphuric acid, charcoal and chloroform used in this study are of analytical reagent grade.

The tea samples are taken from the powders which are available in the Guntur local market.

25g of tea sample is boiled with 100ml of water taken in a 500ml round bottom flask fitted with an air condenser for 15min. The hot solution is filtered and washed with boiling water. To this lead acetate solution is added with constant stirring till complete precipitation is obtained. The hot solution is again filtered and dil.sulphuric acid is added till the whole lead is removed as lead sulphate. The lead sulphate is removed by filtration. To this 0.2g of charcoal is added and the solution is concentrated to half of its volume. The results in solution is filtered and caffeine is extracted by adding 25ml of chloroform in 2 times using a separating funnel. The chloroform is distilled off by heating in a water bath.

The residue is dissolved in minimum amount of water and the solution is cooled. The product obtained is recrystalised from alcohol.

RESULTS AND DISCUSSION

	Weight of caffeine(g)	Melting point(^{0}C)
Sample 1	0.40	237
Sample 2	0.47	240
Sample 3	0.50	241
Sample 4	0.47	242
Sample 5	0.47	241
Sample 6	0.52	238

Caffeine is well known to promote anxiety. The antioxidant properties of phenolics found in foods are much higher than those of vitamin C and vitamin E. So it is appropriate to consume tea, which plays a vital role as an oxidant(8-9). It also shows anti bacterial and anti fungal properties(10). It can act as a natural pesticide. Therefore tea can be considered as a health enhancing food.

Fig. 1 Caffeine Crystals obtained during the experimental work

CONCLUSION

Almost same amount of caffeine is isolated from the 6 samples indicating the same quality of the samples. In order to avoid adverse consequences it is important to know how much amount of caffeine the people are consuming. The results are important because the study confirmed that no problem of taking 3 cups of tea per day.

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