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ENVIRONMENT MONITORING OF TEA LEAVES AGAINST COMMERCIAL FOLIAR SPRAY BY PHYTOCHEMICAL ANALYSIS

Gunasundari G., Sheela R. and Poonguzhali T. V.

P.G Reserch Department of Botany, Queen Mary's College, Chennai -4.

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***Correspondence for Author**
Poonguzhali T. V.
P.G Reserch Department of Botany, Queen Mary's College, Chennai -4.

ABSTRACT

Foliar spray of chemical on commercial foliage products such as greens, tea leaves and vegetables causes a ditrect lethal effect to the consumer. Hence the present work has been carried out as a check against three commercial brands of Tea leaf dust such as Three roses tea, Ooty tea and Green tea phytochemical analysis of these brands showed that the secondary metabolites were present. Glycosides and alkloids were totally absent in all the three brands steroids and flavonoids were absent in Three roses tea and green tea. The reduction in the phytochemicals may be direct link towards the cultural practices.

KEYWORDS: Foliar spray, Tea leaf dust, Phytochemical.

INTRODUCTION

The world now focuses its attention on Organic manure and Organic Pesticides which will not cause any side effects to the consumers. There is a report that foliar spray of chemicals (Pesticides) to tea leaves may be a root cause of diseases such a Cancer, Ulcer and digestive disorder. An environmental monitoring system is necessary to check the products. Hence this study was taken up to find out the quality of three tea Products select random by such as there Three Roses Tea, Ooty Tea and Green Tea.

Camellia sinensis Linn.is the plant species of the family ***Theaceae.*** The chemistry of ***camellia sinensis*** is complex, which contains polyphenols, alkaloid, amino acide, glucosides, proteins, volatile compounds, minerals and trace elaments. The most abundant components in green tea are polyphenols, in particular flavonoids such as the catechines, catechin gallates and proanthocyanidins. Several studies had been conducted to find whether *Camellia sinensis* can be used as future pharmaceutical medicine, replacing semi-synthetic antibiotics. This study is mainly to test the effect of sprayed pesticides on various disease.

MATERIALS AND METHODS

Sample collection

The three different bands of tea dust (Three Roses tea, Ooty tea and Green tea) was collected.

Sample solvent extraction

5g of Three tea dust brands measuring, 50 mL distilled water boiled up to 60^0C, for 6 or 7 minutes. After the aqueous extracts were separately filtered using sterile what man no.1 filter paper. These extracts were used in further process.

Phytochemical screening of given sample

Phytochemical screening was carried out on the given sample using different solvents to identity the major natural such tannins, saponins, flavonids, phenols, terpenoids, alkaloids, glycosides, cardiac glycoside. General reactions in these analysis revealed the presence or absence of these compounds in the aqueous extracts tested.

Qualitative Phytochemicals analysis

Qualitative phytochemical analysis of the *camellia sinensis* tea leaf extracts using different solvent using standards methods were studied.

Test of Terpenoids

To 5 mL of the tea dust extract, 5 drops of chloroform along with concentration sulphuric acid (H_2SO_4). The mixture was observed for the formation of dark reddish brown pink colour which indicated presence of terpenoids.

Test of Tannins

To 2 mL of extract, 5% ferric chloride (Fecl3) solution was added observed for the formation of blue or green colour for presence of tannins.

Test of Saponins

For Saponins identification, 2 mL of distilled water was added. The mixture was shaken for 15 minutes. Observation of formation of presence 2 cm foam indicated the presence of saponins.

Test of Quinones

For Quinones identification 2 mL of aqueous extract, 1 mL of concentrated sulphuric acid (H2SO4) was added. Formation of red colour indicates the presence of quinones.

Test of Alkaloids

To 1 mL of aqueous tea extract 1 mL of 2N sodium hydroxide (NaOH) was added. Formation of Yellow colour indicated the presence of alkaloids.

Test of Steroids

For Steroids identification, 5 mL of the extract was added to 2 mL of chloroform and few drops of concentration sulpuric acid. Appearance of reddish brown ring indicated the presence of steroids.

Test of Phenols

For Phenols identification 5 mL of the tea extract was added to 2 mL distilled water. To this solution, 3 mL of 10% Ferric chloride ($Fecl_2$) solution was added. Formation of a dark – green colour indicated the prensence of Phenolic compounds.

Test of Glycosides

For Glycosides identification 2 mL of tea extract, 3 mL of chloroform and ammonia solution (10%) was added formation of pink colour indicated the presence of glycosides.

Test of Cardiac glycosides

For Cardiac glycosides identification, 5 mL of each plant extract was treated with 2 mL of glacial acetic acid and one drop of ferric chloride solution were added 1 mL of concentration. Sulphuric acid ($_{H2SO4)}$ was carefully added to form separate layer. A brown ring at the interface due to the presence of deoxy sugar characteristic of cardiac gycosides and a pale green colour in the upper layer indicated the presence of cardiac glycosides.

Test of Flavonoids

For Flavonoids identification 1 mL of tea extract in a test tube was added to 1 mL of 5% lead acetate and the mixture was allowed to stand at room temperature (25°c) for two minitues. The formation of white preciptate in any of the sample that the extract contained flavonoids.

RESULT

Phytochemicals such as tannins, saponins, flavoids, steroids, glycosides, alkaloids, phenol, cardiac glycosides of the different aqueous extracts were carried out. In the present of study the different tea aqueous extract the results showed the table.

Table 1 Phytochemical Analysis of the three brands *Camellia sinensis* leaf aqueous extract.

S.No	Chemical compounds	Three Roses Tea	Ooty Tea	Green Tea
1	Terpenoids	+	_	+
2	Tannins	+	+	+
3	Saponins	+	+	+
4	Quinones	+	+	+
5	Alkaloids	_	_	_
6	Steroid	_	+	_
7	Phenols	+	+	+
8	Flavonoids	_	+	_
9	Cardiac glycosides	+	+	+
10	Glycosides	_	_	_

The three brands of tea dust were checked for the presence of phytochemicals. Table shows the presence of Tannins, Saponins, Quinones, Phenols and Cardiac glycosides in all the three brands which alkaloids and glycosides were totally absent.

Three roses tea and Green tea brands lacked Steroids and flavonoids which Ooty tea terpenoids in all the three brands Ooty tea showed the presence of more phytochemicals than other tea brands. Alkaloids were totally absent in all the three sample.

DISCUSSION

The tea leaves (*C.sinensis*) is collected as three leaved shoot contacontains a full complement of enzymes, biochemical intermediates, carbohydrates, proteins and lipids. In addition, tea shoot is distinguished by its remarkable content of polyphenols and methyl xanthines (caffeine and other purines, such as theobromine and theophylline).

The medicinal properties of plants are due to the presence of various secondary metabolites These classes of compound such as alkaloid, tannin, phenols flavonoid are known to have medicinal activity against several pathogens and therefore suggest the traditional use for the treatment of various disease (Usman and osuji, 2007). The phytochemicals are known to have antimicrobial activity (Gupta et al., 2010; Olusanmi and Amadi, 2010). Tannin and flavonoid are thought to be responsible for antidiarrheal activity (Enzo, 2007). Usman and osuji (2007) reported that tannin has been widely used topically to sprains, bruises and superficial wounds

as such. The present study on the phytochemical analysis of the three different brand tea revealed the presence of the tannin, saponins, quinones, phenols and cardiac glycosides.

Theaflavins are orange red substances that contribute significantly to the astringency, briskness, brightness and colour of the beverage. Theaflavins of black tea comprise a number of fractions namely, theaflavin, theaflavin mono gallate and digallate, epitheaflavic acid and isotheaflanin. Thearubigins are complete condensation products of oxidised catechins with theaflavins. Together with HPS, TR (Thearubigins) contributes to the colour, mouth feel and body of the tea liquor. Caffieine is relatively a stable molecule and is a direct stimulant of the central nervous system. These phytochemicals are present in tea which add to the antioxidant and therapeutic nature of tea leaves. But the reductions in phytochemicals many be due the foliar spray on the leaves by pesticides.

CONCLUSION

The present results showed that the phytochemicals were high in brand 2(Ooty tea) than in brand 1(Three rose tea) and 3(Green tea). The reduction in phytochemicals is a direct link to the cultural practice of pesticides such as foliar spray.

REFEREANCES

1. Brantner A, Grein E. Antifungal activity of plant extracts used externally in traditional medicine. Jounal of Ethnopharmacology., 1994; 44: 35-40.
2. Enzo, A.P. (2007). Traditional plants and herb remedies used in the treatment of diarrheal disease. Mode of action quality, efficacy and safety cansiderations. In: Ah mad, I., Aqul, F., Qwaiss, M (Eds), Moder Phyto medicine Turning Medicinal Plants Indo Drugs. WILEY-VCH. Verlag GMBH & Co. KGQA, Weinheim, 248-260.
3. Gupta, C., Gorg, A.P. and Gupta, S. (2010). Antimicrobial and Phytochemical Studies of fresh ripe pulp and dried unripe pulp of Mangifera indica (AMCHUR). Middle –East Journal of Scientific Research, 5(2): 75-80.
4. Usman, H. and Osuji, J.C. (2007). Phytochemical and *in vitro* antimicrobial assay of the leaf extract of *New bouldia leavis*. *The African Journal of Traditional Complementary* and *Alternative Medicines,* 4(4): 476-480.
5. Wang H, Helliwell K. 2011. Determination of flavonols in green and black tea leaves and green tea infusions by high-performance liquid chromatography. *Food Research Internationa*l, 34: 223-227.