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A Study on the Benefits of Tea

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Abstract

Tea plays a significant role in our life. Starting from the early morning we take tea. Tea acts as a stimulant for Central Nervous System, (CNS) and skeletal muscles. That is why tea removes fatigue, tiredness and headache. It also increases the capacity of thinking; it is used in lowering of body temperature. Moreover tea drinking has recently proven to be associated with cell - mediated immune function of the human body. Tea plays an important role in providing immunity against intestinal disorders and in protecting cell membranes from oxidative damage. Tea also prevents dental caries due to the presence of fluoride. The role of tea is well established in normalizing blood pressure, lipid depressing activity, prevention of coronary heart diseases and diabetes by reducing the blood - glucose activity. Both green and black tea infusions contain a number of antioxidants, mainly catechins that have anti - carcinogenic, anti - mutagenic and anti - turmeric properties.

Today, tea forms an integral part of the modern healthy lifestyle, which comprises a balanced diet, combined with regular exercise routine.

Extensive research and studies have revealed that tea is one of the richest sources of antioxidants. These antioxidants, as scientists agree, are found in tea in the form of poly phenols. Antioxidants are important to our health because they protect our bodies from free radicals. Free radicals are oxygen containing molecules that are created by a by - product of our digestive processes. Free radicals left unchecked damage our cells and DNA, leading to disease and aging.

There are many rumors regarding the intake of tea which has no valid proof. It contains so many elements, many of them help us tremendously, but the people are not aware of it. This is the reason for studying this topic.

Introduction

Tea in the form of black or green is the most commonly and widely used soft beverage in the household. It acts as a stimulant for central nervous system and skeletal muscles. It is the agricultural product of the leaves, leaf buds and internodes of various cultivars and sub - varieties of the *Camellia sinensis* plant, processed and cured using various methods. "Tea" also refers to the aromatic beverage prepared from the cured leaves by combination with hot or boiling water, and is the common name for the *Camellia sinensis* plant itself. After water, tea is the most widely consumed beverage in the world. It has a cooling, slightly bitter, astringent which many enjoy.



There are at least six varieties of tea: white, yellow, green, oolong, black, and post fermented teas, of which the most commonly found on the market are white, yellow, green, oolong and black. Some varieties such as traditional oolong tea and Pu-erh tea, a post - fermented tea, can be used medicinally.

The term “herbal tea” usually refers to an infusion or tisane of leaves, flowers, fruit, herbs, or other plant material that contains no *Camellia sinensis*. Tea plants are propagated from seed or by cutting; it takes approximately 4 to 12 years for a tea plant to bear seed, and about 3 years before a new plant is ready for harvesting.

Only the top 1-2 inches of the mature plant are picked. These buds and leaves are called flushes. A plant will grow a new flush every seven to fifteen days during the growing season, and leaves that are slow in development always produce better flavored teas.

Two principal varieties are used: the china plant (*C. Sinensis Sinensis*), used for most Chinese, Formosan and Japanese teas (but not Pu-erh); and the clonal Assam plant (*C. Sinensis assamica*), used in most Indian and other teas (but not Darjeeling). Within these botanical varieties, there are many strains and modern Indian clonal varieties. Leaf size is the chief criterion for the classification of tea plants, with three primary classifications being: Assam type, characterized by the largest leaves; China type, characterized by the smallest leaves; and Cambod, characterized by leaves of intermediate size.

Tea Processing and Classification

Tea processing is the method in which the leaves and flushes from *camellia sinensis* are transformed into the dried leaves for brewing tea. The types of tea are distinguished by the type of processing they undergo. In its most general form, tea processing involves oxidation of the leaves and its molecules, stopping the oxidation, forming the tea and drying it. Of these steps, the degree of oxidation plays a significant role of determining the final flavor of the tea, with curing and leaf breakage contributing to flavor by a lesser amount.

Tea is traditionally classified based on the techniques with which it is produced and processed.

White tea: wilted and unoxidised

Yellow tea: unwilted and unoxidized

Green tea: unwilted and unoxidized

Oolong tea: wilted, bruised, and partially oxidized

Black tea: wilted, sometimes crushed, and fully oxidized

Post - fermented tea: green tea that has been allowed to ferment/ compost.

Although each type of tea has different taste, smell, and visual appearance, tea processing for all tea types consist of a very similar set of methods with only minor variations.

- ❖ **Picking:** Tea leaves and flushes, which include a terminal bud and 2 young leaves, are plucked from *camellia sinensis* bushes typically twice a year during early spring and early summer or late spring-autumn; winter pickings of tea flushes are much less common, though they occur when climate permits. Picking is done by hand when a higher quality tea is needed, or where labor costs are not prohibitive.
- ❖ **Withering/ wilting:** The tea leaves will begin to wilt soon after picking, with a gradual onset of enzymatic oxidation. Wilting is used to remove excess water from the leaves and allows a very slight amount of oxidation. The leaves can be either put under the sun or left in a cool breezy room to pull moisture out from the leaves. The leaves sometimes lose more than a quarter of their weight in water during wilting. The process is also important in promoting the breakdown of leaf proteins into free amino acid and increases the availability of freed caffeine both of which changes the taste of tea.
- ❖ **Bruising:** In order to promote and quicken oxidation, the leaves may be bruised by shaking and tossing in a bamboo tray, tumbling in baskets or being kneaded or rolled -over by heavy wheels. The bruising breaks down the structures within and outside of the leaf cells and allows from the commingling of oxidative enzymes with various substances, which allows for the beginning of oxidation.
- ❖ **Oxidation/ fermentation:** For teas that require oxidation, the leaves are left on their own in a climate - controlled room where they turn progressively darker. This is accompanied by agitation in some cases. In this process the chlorophyll in the leaves is enzymatically broken down, and its tannins are released or transformed.
- ❖ **Fixation/ kill green:** Kill green or shacking is done to stop the tea leaf oxidation at a desired level. This process is accomplished by moderately heating tea leaves, thus deactivating their oxidative enzymes and removing unwanted scents in the leaves, without damaging the flavor of the tea. Traditionally, the tea leaves are panned in a wok or steamed, but with advancements in technology, kill green is sometimes done by baking or “pannin” in a rolling drum. In some white teas and some black teas such as CTC blacks, kill green is done simultaneously with drying.
- ❖ **Rolling/ shaping:** The damp tea leaves are then rolled to be formed into wrinkled strips, by hand or using a rolling machine which causes the tea to wrap around itself. This rolling action also causes some of the sap, essential oils, and juices inside the leaves to ooze out, which further enhances the taste of the tea. The strips of tea can then be formed into other shapes, such as being rolled into spirals, kneaded and rolled into pellets, or tied into balls, cones and other elaborate shapes.
- ❖ **Drying:** Drying is done to “finish” the tea for sale. This can be done in a myriad of ways including planning, sunning, air drying, or baking. However, baking is usually the most common. Great care must be taken to not over - cook the leaves. The drying of the produced tea is responsible for many new flavor compounds particularly important in green teas.

Without careful moisture and temperature control during its manufacture and life thereafter, fungi will grow on tea. This form of fungus causes real fermentation that will contaminate the tea and may render the tea unfit for consumption.

Content

Tea contains catechins, a type of antioxidant. In a freshly picked tea leaf, catechins can compose up to 30% of the dry weight. Catechins are highest in concentration in white and green teas, while black tea has substantially fewer due to its oxidative preparation. Tea also contains theanine and the stimulant caffeine at about 3% of its dry weight, translating to between 30 mg and 90 mg per 8 oz (250 ml) cup depending on type, brand and brewing method. Tea also contains small amounts of theobromine and theophylline. Due to modern day environmental pollution fluoride and aluminium have also been found to occur in tea, with certain types of brick tea made from old leaves and stems having the highest levels. This occurs due to the tea plant's high sensitivity to and absorption of environmental pollutants.

Dry tea has more caffeine by weight than coffee; but a cup of brewed tea contains significantly less caffeine than a cup of coffee of the same size.

Tea has negligible carbohydrates, fat and protein.

Although tea contains various types of polyphenols and tannin, tea does not contain tannic acid.

Chemical Composition of Fresh Tea Shoot

Compounds %	Dry Weight	Contribution
Total polyphenols	25 – 30	Astringency
Flavanols		
(-) epigallocatechin gallate	8 - 12	
(-) epicatechin gallate	3 - 6	
(-) epigallo catechin	3 - 6	
(-) epicatechin	1 – 3	
(+) catechin	1 – 2	
(+) gallo catechin	3 – 4	
Flavonols and flavonol glycosides	3 - 4	
Leuco anthocyanins	2 – 3	
Polyphenolic acids and depsides	3 – 4	
Caffeine	3 – 4	Briskness
Theobromine	0.2	
Theophylline	0.5	
Amino acids	4 – 5	Brothyness
Organic acids	0.5 -0.6	
Compounds %	Dry Weight	Contribution
Monosaccharides	4 - 5	
Polysaccharides	14 - 22	
Cellulose and hemicelluloses	4 - 7	
Pectins	5 - 6	
Lignin	5 - 6	
Protein	14 - 17	

Lipids	3 - 5	
Chlorophylls and other pigments	0.5 - 0.6	Colour and appearance
Ash (minerals)	5 - 6	
Volatiles	0.01 - 0.02	Aroma

Average Chemical Composition of Orthodox And CTC Teas Made From Assam Clones

Composition	Orthodox Teas	Ctc Teas
Water soluble solids %	39.52	41.12
Theaflavins %	0.59	1.30
Thearubigin %	6.5	18.00
Total lipid	3.11	3.68
Carotenoids (I _g /g)	215	176
Flavor volatilesd	18.40	8.20
Total fibre %	19.35	18.93
Crude fibre %	11.70	11.12
Chlorophyll a mg/g	1.38	0.48
Chlorophyll b mg/g	0.77	0.58

Biochemical Compounds Responsible for Colour

Compounds	Colour
Theaflavins	Yellowish brown
Thearubigins	Reddish brown
Flavonol glycosides	Light yellow
Pheophorbide	Brownish
Pheophytin	Blackish
Carotene	Yellow

Biochemical Compounds Responsible for Taste

Compounds	Taste
Polyphenol	Astringent
Amino acids	Brothy
COMPOUNDS	TASTE
Caffeine	Bitter
Theaflavins	Astringent
Thearubigin	Ashy and slight astringent

Biochemical Compounds Responsible For Flavour

Compounds	Flavour
Linalool, Linalool oxide	Sweet
Geraniol, Phenylacetaldehyde	Floral
Nerolidol, Benzaldehyde, Methyl salicylate, Phenyl ethanol	Fruity
Trans - 2 - Hexanal, n - Hexanal, Cis - 3 - Hexanol, Grassy, b - Ionone	Fresh flavor

Principal Components of Black Tea Beverage

Components	Concentration (G/100g)
Catechins	3
Theaflavins	3
Thearubigins	12
Flavanols	6
Phenolic acids and Depsides	10
Amino acids	13
Methylxanthines	8
Carbohydrates	10
Protein	0.8
Mineral matter	8
Volatiles	0.05

Health Effects of Tea

Health effects of tea have been examined ever since the first infusions of *Camellia sinensis* about 4700 years ago in China. *Camellia sinensis* infusions were useful for treating conditions including tumors, abscesses, bladder ailments, and lethargy. Possible beneficial health effects of tea consumption have been suggested and supported by some studies, but others have found no beneficial effects. The studies contrast other claims, including anti nutritional effects such as preventing absorption of iron and protein, usually attributed to tannin. Tea has historically been associated with cognitive benefits such as mental clarity and concentration. Recent findings attribute these benefits to caffeine and theanine, two constituents of tea (Bryan, 2008).

Performance benefits of tea were initially identified in two open-label studies (Hindmarch et al., 1998; 2000), comparing tea to water and coffee with or without caffeine over the course of a day. Results showed improvements in performance and alertness after caffeine, as well as tentative evidence of beneficial effects of tea over caffeinated water.

Two recent studies provided a broader perspective on tea's effects on psychological wellbeing. A cross-sectional study showed that participants who consumed more tea felt less tired and reported higher levels of subjective work performance (Bryan et al., 2012). Furthermore, tea consumption can positively affect mood and may improve creative problem solving, as compared to water (Einothar et al., 2012).

The vast majority of studies have been of green tea; however, some studies have been made of the other types of tea derived from *Camellia sinensis*, such as white, oolong, black tea. Green tea has been claimed to be helpful for atherosclerosis, LDL cholesterol, cancer, inflammatory bowel disease, diabetes, liver disease, weight loss, neuro degenerative diseases and even halitosis.

Potential Benefits

There have been various general surveys of the work on the relationship between tea drinking and health that has taken place in recent years. In an article entitled 'Prophylactic functions of tea polyphenols', at the Health and Tea Convention in Colombo in 1992, Dr Y. Hara, the General Manager of the Food Research Laboratories of Mitsui Norin Company Ltd, reports that 'Results have proved that tea polyphenols are multifunctionally effective in preventing putrefaction or

racidity of foods, infection of alimentary or respiratory diseases, or development of malignant tumors, among other beneficial properties. Green tea catechins have also been shown to possess antibiotic properties due to their role in disrupting a specific stage of the bacterial DNA replication process.

Anti-Cancer Properties

An article in 'New Scientist' magazine mentions that numerous studies suggest that green tea protects against a range of cancers, including lung, prostate and breast cancer. The reason cited is the antioxidant epigallocatechin gallate (EGCG), according to Hirofumi Tachibana's team at Kyushu University. Their research showed that growth of human lung cancer cells with a cell receptor called *67 LR* is slowed significantly after drinking just two or three cups of green tea, which contains EGCG.

Another study from the life science journal 'Carcinogenesis' showed that green tea, in combination with tamoxifen, is effective in suppressing breast cancer growth *in vitro* human breast cancer tumors and *in vivo* animal experiments in mice. A study at Taiwan's Chung Shah Medical University found that people who drank at least one cup of green tea per day were five times less likely to develop lung cancer than those who did not.

The anti-carcinogenic effect of green tea on gastric cancer was refuted by a large - scale, population-based, prospective cohort study in Japan that involved more than 26000 residents. Several case control studies suggest an inverse relation between green tea consumption and gastric cancer reduction.

Typical applications of green extracts (EGCG) have protective effects on UVA – and UVB – induced skin damage (photo aging and carcinogenesis).

In July 2005 review of claims made about the health benefits of green tea, the U.S. Food and Drug Administration concluded that it was highly unlikely that green tea reduces the risk of breast and prostate cancer. The FDA believes that the evidence does not support qualified health claims for green tea consumption and a reduced risk of cancer.

Increases Metabolic Rate

Clinical trials conducted by the University of Geneva and the University of Birmingham indicate that green tea raises metabolic rates, speeds up fat oxidation and improves insulin sensitivity and glucose tolerance. In addition to caffeine, green tea contains catechin polyphenols that raise thermogenesis (the production of heat by the body), and hence increases energy expenditure. There is also a suggestion that it can increase endurance in exercise by improving fat metabolism.

Possible Anti - Diabetes Effect

There is also epidemiological evidence that drinking green tea and black tea may help prevent diabetes, although it is worth noting that this is evidence of an association, and that future studies are needed to confirm the effect.

Boosts Mental Alertness

The amino acid L - theanine, found almost exclusively in the tea plant, actively alters the attention networks of the brain, according to results of human trials announced in September 2007.

Boosts Immune System

On 21 April 2003 the Brigham and women's hospital released details of a research project which indicated that theanine may help the body's immune system response when fighting infection.

Lowers Chances of Cognitive Impairment

A study made in 2006 showed that elderly Japanese people who consumed more than 2 cups of green tea a day had a 50% lower chance of having cognitive impairment, in comparison to those who drank fewer than 2 cups a day, or who consumed other tested beverages. This is probably due to the effect of EGCG.

In 2010, researchers found that people who consumed tea had significantly less cognitive decline than non - tea drinkers. Study participants who drank tea 5 – 10 times/ year, 1 – 3 times/ month, 1 - 4 times/week, and 5 + times/week had average annual rates of decline 17 %, 32%, 37%, and 26% lower, respectively, than non - tea drinkers.

Lowers Stress Hormone Levels

According to a study by researchers at University College London, drinking black tea can lead to lower levels of the stress hormone cortisol after a stressful event. Fifty minutes after being subjected to challenging tasks, subjects who had been drinking 4 cups of black tea daily for 6 weeks, had a 20% greater drop in cortisol than the placebo group. Blood platelet activation, which is linked to blood clotting and the risk of heart attacks, was also lower for tea drinkers.

Effects on Hiv

A recent study appearing in the journal of Allergy and clinical immunology was the subject of an article on BBC news. It stated that epigallocatechin gallate (EGCG) found in green tea can lead to the inhibition of HIV binding and may be used as a complementary therapy for HIV patients, but qualified it by noting that "it is not a cure, and nor is it a safe way to avoid infection, however, we suggest that it should be used in combination with conventional medicines to improve quality of life for those infected." It was an in vitro (test tube) study, not an in vivo study, which only tested effects of a chemical in green tea. "Many substances shown to prevent HIV infection in the test tube turn out to have little or no effect in real life, so I think there's a long way to go before any one should rely on green tea to protect against HIV infection."

Iron over Load Disorders

Researchers in Germany have found that a daily cup of black tea can help stop excess iron damaging in the bodies of people who suffer from hemochromatosis due to its high content of flavonoids, which limit iron absorption.

Effects Associated With Caffeine

A cup of green tea contains between 15 and 50 mg of caffeine. Certain cognitive benefits are associated with caffeine consumption, such as a reduction in the likelihood of Parkinson's disease and a temporary increase in short term memory. Further, caffeine consumption has been linked with greater athletic performance, healthy weight loss, reduction in duration and severity of headaches and is effective in treating the symptoms of asthma.

Effects on Bacterial and Fungal Infections

A study at Pace University reported in *American Society for Microbiology* (May 2008) found white tea extracts effective at treating bacterial infections, such as *staphylococcus*, *streptococcus*, *pneumonia* and *dental caries*. White tea was also found to be effective in treating fungal infections from *Penicillium chrysogenum* and *saccharomyces cerevisiae*. Researchers also reported that white tea extracts showed a greater effect than green tea extracts.

Stroke

Research presented at the International Stroke Conference in February 2009 found that drinking three or more cups of tea per day can reduce the risk of suffering a stroke by as much as 21%. The research, conducted at the University of California, Los Angeles (UCL), found that drinking green and black varieties of teas has a significant impact on the risk of stroke.

Cardiovascular Health

Consumption of tea has been inversely associated with cardiovascular morbidity and mortality. Broad body of evidence from experimental and clinical studies indicates that tea exerts antioxidative, anti-inflammatory, and vasodilating effects, thereby rendering protection against cardiovascular diseases. Research published in April 2009 by the University of L'Aquila and funded by the Unilever-owned Lipton Institute of Tea suggests that drinking just one cup of regular, black tea per day may help to protect against cardiovascular disease. The research showed that black tea consumption does—depending on dose—improve blood vessel reactivity, reduce both blood pressure and arterial stiffness, indicating a notably better cardiovascular health profile.

Antidepressant Properties

In a Japanese study, green tea consumption was inversely associated with psychological distress even after adjustment for possible confounding factors. A more frequent consumption of green tea was associated with a lower prevalence of depressive symptoms in another Japanese study.

Weight Loss and Cholesterol

Green tea and its extract have been shown to fight obesity and lower LDL “bad” cholesterol – two risk factors for heart disease and diabetes. One study in the Netherlands and a study in Japan showed that green tea did both. In the Dutch study, participants who drank caffeinated green tea lost more weight, but even those who typically drank the decaf variety saw a decrease in their waistlines and body weight. Researchers speculated that the caffeine helps with fat oxidation. In the Japanese study, 240 men and women were given varying amounts of green tea extract for three months. Those who got the highest amount lost fat and weight and had lower blood pressure and lower LDL “bad” cholesterol.

Objectives of the Study

- To create an awareness among people about the effectiveness of tea on health.
- To know the chemical composition of tea leaves.

Methodology

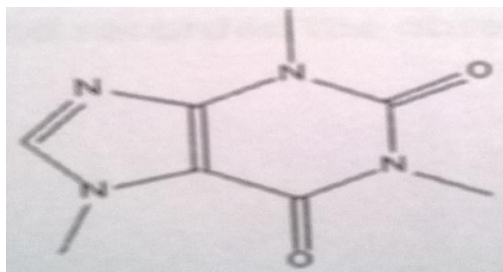
A good research always follows a sound methodology and procedure otherwise findings of the study will be of generalized facts. Tea contains more than 700 chemicals among which the

compounds closely related to human health are Flavonols i.e. catechins, amino acids, vitamins (C, K and E), caffeine and polysaccharides.

Since testing of all the chemicals mentioned above was not possible, the main stress has been given on caffeine and catechin. So, in this project a study has been made to identify the presence of caffeine and catechin in samples of tea leaves.

Caffeine

The most important methylated alkaloid that occurs naturally is caffeine. Its molecular formula is $C_8H_{10}N_4O_2$. Its IUPAC name is 1, 3, 7 - tri methyl xanthene.



Purely it is white, crystalline solids in the form of needles. Its melting point is $123^{\circ}C$. It is the main active principle component of tea leaves. It is present in tea leaves up to 3% and can be extracted by first boiling the tea leaves with water which dissolves many glycoside compounds in addition to caffeine. The clear solution is then treated with lead acetate to precipitate the glycoside compounds in the form of lead complex. The clear filtrate is then extracted with extracts caffeine because it is more soluble in it than water.

Procedure of Determination of Caffeine

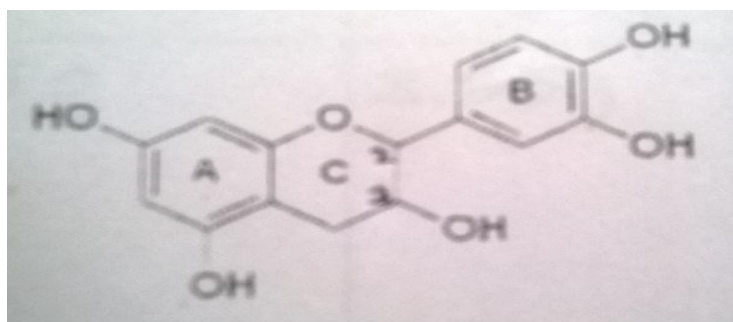
- 50 grams of tea leaves is taken in a beaker and 150 ml of water is added to it.
- Beaker is heated up to extreme boiling.
- The solution is then filtered and lead acetate is added to the filtrate, leading to the formation of a curdy brown colored precipitate.
- Keep on adding lead acetate till no more precipitate is formed.
- Again filter the solution. The filtrate so obtained is heated until it had become 50 ml.
- Cool the solution.
- After that 20 ml of chloroform is added to it.
- Soon after, two layers appeared in the separating funnel.
- Separate the lower layer.
- The solution is then exposed to moisture in order to allow chloroform to get evaporated.
- The residue left behind is caffeine.
- Take the weight.

Sl. No.	Brand name of tea	Weight of tea leaves	Weight of china dish	Weight of china dish with precipitate	Amount of caffeine	% of caffeine = $\frac{Y}{X} \times 100$
		X gram			Y gram	
1	Red label tea (Brooke Bond)	50 g	46.6 g	47.20 g	0.60 g	1.2%

2	Maaza Gold	50 g	46.6 g	47.10 g	0.50 g	1%
3	Raja tea	50 g	46.6 g	46.90 g	0.30 g	0.6%

Catechins

Catechin is a poly phenolic antioxidant plant secondary metabolite. The term catechins is also commonly used to refer to the related family of flavonoids and the subgroup flavan- 3 - ols (or simply flavanols).



Catechin possesses two benzene rings (called the A-and B-rings) and a dihydropyran heterocycle (the C - ring) with a hydroxyl group on carbon 3. The ring A is similar to a resorcinol moiety while the B ring is similar to a catechol moiety. There are two chiral centers on the molecule on carbons 2 and 3. It has therefore four diastereo isomers. Two of the isomers are in Tran's configuration and are called catechin and the other two are in cis configuration and are called *epicatechin*.

Tea contains up to 30% of the water soluble polyphenols (catechin). These are largely responsible for the flavour of tea. To estimate the extent of these compounds in a given sample, the tea leaves are immersed in hot water for equal time and the loss in the weight of tea leaves is determined.

Procedure of Determination of Catechin

- 5 gram of each of the different samples is taken in different tea bags.
- Each of the tea bags are dipped in different beakers of 100 ml hot water.
- After 10 minutes, the tea bags are removed from beakers.
- Tea bags are then placed in sunlight to dry.
- After drying, the tea bags are weighed and recorded the observations.

Sl. No.	Brand name of tea	Initial weight X gram	Final weight Y gram	Loss of weight, Z = (X-Y) gram	% of water soluble component = $(Z/X) \times 100$
1	Red label tea (Brooke Bond)	5 g	3.65 g	1.35 g	27 %
2	Maaza Gold	5 g	3.75 g	1.25 g	25 %
3	Raja tea	5 g	4.1 g	0.9 g	18 %

Result

1. Red label tea contains 1.2 % of caffeine and that of catechin is 27 %.

2. Maaza gold tea contains 1% of caffeine and that of catechin is 25 %.
3. Raja tea contains 0.6 % of caffeine and that of catechin is 18 %.

Findings

Caffeine has long been on the list of don'ts for people hoping to lead a healthy lifestyle. Doctors pointed to caffeine's negative effects on the nervous system and how it can increase anxiety, stress and food cravings, in addition to inhibiting sleep. Recent studies however, have shown that coffee and caffeine may actually have some significant medical benefits.

- It is psycho – stimulant.
- It improves physical and mental ability.
- Its effects in learning are doubtful but intellectual performance may improve where it has been used to reduce fatigue or boredom.
- When administered internally, it stimulates heart and nervous system and also acts as a diuretic. On the contrary, their excessive use is harmful to digestion and their long use leads to mental retardation.

Tea, fruits, and vegetables are known to be the richest sources of antioxidants, where, tea tops the list in its richness.

- Flavonoids in tea prevent the oxidation of LDL cholesterol, thereby reducing the risk of heart diseases.
- Polyphenolic antioxidants in tea lower the risk of different types of cancer (lung, fore-stomach, esophagus, duodenum, pancreas, liver, breast and colon).

Conclusion

TEA has always been a most popular beverage in the household. Over a 100 scientific research papers produced over the last decade shows that tea provides immense health benefits. Besides, all of us know that tea has always been a rejuvenating, relaxing, natural and healthy beverage. It is also known to have therapeutic benefits which were utilized even in the ancient ages, to treat common ailments.

Today, tea forms an integral part of the modern healthy lifestyle, which comprises a balanced diet, combined with regular exercise routine.

References

- 1) Ahmad, N. (1998). *Nutrition and Chemical Toxicity*. Sussex, England: John Wiley and Sons.
- 2) Bryan, J. (2008). Psychological effects of dietary components of tea: caffeine and L-theanine. *Nutrition Reviews*, 66, 82-90.
- 3) Bryan, J, Tuckey, M., Einöther S.J.L., Garczarek, U., Garrick, A., & De Bruin, E.A. (2012). The relationship between tea and other beverage consumption, work performance and mood. *Appetite*, 58 (1), 339–346.
- 4) Copper, R., Morré, J, D., & Dorothy, M. M. (2005). Medicinal Benefits of Green Tea: Part I Review of Noncancerous Health Benefits. *The Journal of Alternative and Complementary Medicine*, 11(3), 521–528.

- 5) Einother, S.J.L., Baas, M., Rowson, M., Giesbrecht, T. (2012). A cup of creativity? Positive affect and insights after tea consumption. To be presented at the European Conference of Positive Psychology, June 26-29 2012, Moscow, Russia.
- 6) Hindmarch, I., Quinlan, P.T., Moore, K.L., and Parkin, C. (1998). The effects of black tea and other beverages on aspects of cognition and psychomotor performance. *Psychopharmacology*, 139, 230-238.
- 7) Hindmarch, I., Rigney, U., Stanley, N., Quinlan, P., Rycroft, J., and Lane, J. (2000). A naturalistic investigation of the effects of day-long consumption of tea, coffee and water on alertness, sleep onset and sleep quality. *Psychopharmacology*, 149, 203-216.
- 8) Nakachi, K., Matsuyama, S., Miyake, S., Suganuma, M., & Imai, K. (2000). Preventive effects of drinking green tea on cancer and cardiovascular disease: epidemiological evidence for multiple targeting prevention. *Biofactors*, 13, 49–54.
- 9) Nyfors, S., Syrjanen, R., & Kononen, E. (2004). Impact of antimicrobial exposure and β -lactamase-producing bacteria on salivary β -lactamase activity in infancy. *International Journal of Antimicrobial Agents*: 24 (5), 463-467.
- 10) Sakanaka, S., Sato, T., Kim, M., & Yamamoto, T. (1990). Inhibitory Effects of Green Tea Polyphenols on Glucan Synthesis and Cellular Adherence of Cariogenic Streptococci. *Agricultural and Biological Chemistry*, 54 (11), 2925-2929.
- 11) Sano, J., Inami, S., Seimiya, K., Ohba, T., Sakai, S., Takano, T., & Mizuno, K. (2004). Effects of green tea intake on the development of coronary artery disease. *Circ J*, 68, 665–670.
- 12) Sinija, V. R., & Mishra, H. N. (2008). Green tea: Health Benefits. *Journal of Nutritional & Environmental Medicine*, 17(4), 232–242.
- 13) Stensvold, I., Tverdal, A., Solvoll K, & Foss, O.P. (1992). Tea consumption relationship to cholesterol, blood pressure, and coronary and total mortality. *Prev Med*, 21, 546–553.