

Research Article

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Evaluation of Acceptance of Bay Leaf Tea as a Healthy Lifestyle Modification in Relation to Milk Tea

Afifa Jahan¹, R. Arunjyothi² and K. Aparna³¹Department of Food and Nutrition, Krishi Vigyan Kendra-Palem, PJTSAU Nagarkurnool District, 509215, India²Department of Home Science, Krishi Vigyan Kendra-Mamnoon, PVNRTVU Warangal District, 506166, India³Quality control lab, Rajendranagar, Hyderabad, 500030, India

ABSTRACT

Bay Leaf (Cinnamomum tamala) is an aromatic leaf of the Lauraceae family commonly known as "Tejpatta" in India with various medicinal properties. Usually cultivated at 500m to 2200m altitude in sub-montane and montane Himalayas. It's a perennial or small evergreen tree, attaining 8-12 meters in height and a girth of 150 cm. Due to its high flavors, it's usually used in Biryani, soups, and vegetarian and non-vegetarian dishes. It is used in the treatment of rheumatism, diarrhea, colic, enlargement of the spleen, and snakebite due to its antibacterial and -anti-fungal properties. It has hyperlipidemic, anti-diabetic activity, gastroprotective, anti-helminthic/ antiprotozoal activity, antidiarrhoeal, antifungal, and antibacterial properties. In the present study, 300 samples were selected and motivated to consume bay leaf tea for six months instead of Milk tea. Bay Leaf tea consumption was initially not appreciated but consumption over time till 6 months in replacement of milk tea was 100% accepted. The association of acceptability of Bay tea over time was studied with a chi-square test and found significant at a 1% the level of significance. The association of acceptability of Bay tea over time was studied with a Regression test and found significant at a 1% of the level of significance. Hence with an increase in days, the acceptability of Bay leaf Tea has increased.

Keywords: *Cinnamomum tamala, Lauraceae family, Tejpatta, Antidiabetic, gastroprotective, anti-helminthic/ antiprotozoal activity, antidiarrhoeal, antifungal and antibacterial*

INTRODUCTION

Bay leaf (*Cinnamomum tamala*) belongs to the family of Lauraceae. It is an aromatic leaf classified in spices commonly called "Tejpatta" with high medicinal properties to treat various health ailments and used in Ayurveda [1]. It is usually a culinary ingredient used as dried or fresh leaves [2]. The fresh leaves are rich in vitamin C, vitamin A, and B vitamins such as niacin, pyridoxine, pantothenic acid and riboflavin, dietary fiber and natural antioxidants [3]. However, the dried leaves also give their best flavour and are used extensively to prepare delicious Biryani, Mughlai vegetarian and non-vegetarian dishes and spice powders, etc [4]. Hence it's usually referred as Biryani Leaf in Telangana.

These plants are native to India, Nepal, Bhutan, and China. It is also found in tropical and subtropical Asia, Australia, the Pacific region, and South Asia [5]. Commonly occurs at 500m to 2200m altitude in sub-montane and montane Himalayas. It's a perennial or small evergreen tree, attaining 8-12 meters in

height and a girth of 150 cm. *Cinnamomum* family contains about 55 genera and over 2000 species worldwide [6]. In India it is usually cultivated in tropical and subtropical Himalayas at an altitude of 900-2500 m in the regions of Khasi hills, Nilgiri hills, Meghalaya, Manipur, and Sikkim [7]. Uttarakhand Tejpat received a geographical indication Tag (GI) in the year 2016. There are 8 special species cultivated in the Himalayan region that is *Cinnamomum bejolghota* (Buch-Ham) Sweet, *Cinnamomum comphora* (L.) J. presl, *Cinnamomum glanduliferum* (wall.) Meisn, *Cinnamomum glaucescens* (Nees) Hand-Mazz., *Cinnamomum impressinervium* Mesin, *Cinnamomum parthenoxylon* (Jack) Meism., *Cinnamomum tamala* (BuchHam) Nees and Eberm., and *Cinnamomum zeylanicum* Breyn. In all of the above species, *C. tamala* is reported the improvement in digestion as well as appetite stimulation [8].

Food industries are commonly used it due to their special aroma [9] and hypoglycemic and hypolipidemic properties [10]. Bay leaf is used in meat and fast food seasonings, sauces and pickles, baked goods, confectionery, cola-type drinks, tobacco flavors, and in dental and pharmaceutical preparations [11] and also as a preservative for pineapple juices [12]. It is used in the treatment of rheumatism, diarrhoea, colic, enlargement of the spleen, and snakebite due to its antibacterial and anti fungal properties [13]. It also has antidiabetic, diuretic and appetite stimulant properties [14]. It is also proven to protect from lung and oral cavity cancers [15]. It is used for the treatment of

*Corresponding Author: Afifa Jahan
Email Address: afifajahan26@gmail.com

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anorexia, bladder disorders, dryness of mouth, coryza, diarrhea, nausea and spermatorhea [16].

Apart from Vitamins and Minerals its rich in some essential oils like cineol (50%) eugenol, chavicol, acetyl eugenol, methyl eugenol, α and β -pinene, phellandrene, linalool, geraniol, and terpineol [17]. Bay leaf oil is medicinally used as a carminative, anti-flatulent, diuretic, and in cardiac disorders [18]. These essential oils extracted from Bay Leaf are used in many traditional practices of medicine for the treatment of arthritis, muscle pain, bronchitis, and flu symptoms [19]. They are also utilized in the cosmetic and perfumery industries including their usage in soap and toothpaste. These essential oils extracted from Bay Leaf are reported to have chemoprotective activity [20]. These leaves help in enzyme synthesis, nervous system function, and regulating body metabolism [21].

These leaf oil has many bioactive compounds including Furanogermenone, β - caryophyllene, ermacerened, curcumenol, curzerenone, furanodiene and furanodienone and these chemical compounds are reported to possess various pharmacological activities such as anti-hyperlipidemic, anti-diabetic activity, gastroprotective, anti-helminthic/ antiprotozoal activity, antidiarrhoeal, antifungal and antibacterial [22]. The three compounds quercetin, laempferol and quercetrin of Cinnamomum leaf is responsible for antioxidant activity[23-24]. These oil extracts are beneficial in curing eczema-like skin disorders [25] and are also used against wound infections. It also helps in the treatment of asthma by removing extra mucus from the lungs by melting it due to its hot potency [26]. The dried leaves and bark of Tejpatra were prescribed for fever, anemia, body odour, mouth refresher, and used in chewing gums for dental problems like reducing tooth pain [27]. As these herbs are natural their formulations are associated with negligible toxicity and are free from any kind of adulteration [28].

METHODOLOGY

Objective: The main objective of this study was to test the acceptability of bay leaf tea and assess its attributes.

Study Area: The study was carried out for 3 years 2020 to 2022 in Nagarkurnool district of Telangana state, India.

Study Subject: Studied for 300 sample size at Nagarkurnool district of Telangana state.

Sampling technique: Convenience sampling technique is followed as subjects consuming milk tea are selected for the study purposively to study the difference between both types of teas (Milk tea and Bay leaf tea) and to document attributes of Bay leaf tea

Data collection: The basic family economic, health, frequency of consumption of tea and supplementary data for the study is collected through questionnaire method.

Intervention: There are three components in intervention of the present study a. Nutritional education programs, b. Method demonstrations and c. Consumption of Bay leaf tea.

- Nutritional education programs: Under nutritional awareness programs Dr.Afifa Jahan scientist, KVK-Palem has conducted awareness camps, group meetings, and diagnostic field visits to sensitize farmers and farm women about the importance of Bay leaf and the consumption of Bay leaf tea in the district. As it is an underutilized spice with Nutraceutical properties.
- Method demonstrations: Under this, the farm women and farmers were given first-hand training in the preparation of Bay leaf tea in different villages of Nagarkurnool District.
- Consumption of Bay leaf tea: Farm women and farmers were encouraged to start the consumption of Bay leaf tea as a substitute to milk tea and every year 100 samples were given free Bay leaf tea powder. In three years 300 farmers and farm women were selected and given Bay leaf tea powder prepared at Krishi Vigyan Kendra, Palem, Nagarkurnool district following the procedure described by [29].

Data analysis: The SPSS software was used for the analysis of the data. Chi square test and Regression test is done to study the acceptability of Bay leaf Tea over a period of 180 days.

DISCUSSION

The main objective of the study was to create awareness about the bay leaf and incorporate healthy lifestyle modification of consumption of Bay leaf tea than milk tea and to test the acceptability of the bay leaf tea and assess its attributes. In the present study during the year 2020 hundred samples were selected and given awareness and method demonstration for the preparation of Bay leaf Tea, during the year 2021 hundred samples were selected and given awareness and method demonstration for the preparation of Bay leaf Tea and during 2022 hundred samples were selected and given awareness and method demonstration for preparation of Bay leaf Tea. The selected samples were given bay leaf tea powder and instructed to consume it for six months. The pre and post-test results were collected. All three hundred samples were assessed about the acceptability, taste, and benefits they found after consumption of bay leaf tea for six months. The tea was prepared by the method described by [29]. The Nutritional Value was calculated and given in Table I

Table I Nutritional composition of Bay leaf tea compared to Milk Tea

Nutritional Compounds	Check (Milk Tea)	Demo (Bay Leaf Tea)
Calories	10 cal	2 cal
Carbohydrates	0.85 g	0.47 g
Protein	0.53 g	0 g
Fat	0.47 g	0 g

RESULTS

The three hundred samples were assessed before the intake of tea through a questionnaire method. The majority of the the sample was addicted to the milk tea and was not accepting the Bay leaf tea but after continuous consumption, for about 6

months, 100% of sample accepted as shown in Table II and Fig I. the results of problems encountered with milk tea and Bay Leaf is explained in Table III.

Table II Acceptance of Bay Leaf tea compare to Milk tea from day 1 to day 180.

Acceptance of Bay Leaf tea compare to Milk tea							
	Day 1	Day 30	Day 60	Day 90	Day 120	Day 150	Day 180
Liked	18	56	89	178	220	298	300
Disliked	282	244	211	122	80	2	0

Table III Problems encountered with Milk Tea and Bay Leaf Tea

S.No	Problems encountered with Milk Tea and Bay Leaf Tea	Milk Tea	Bay Leaf Tea
1.	Decrease in Burning sensation/bloating stomach	-	100%
2.	Decrease in Headache	90%	10 %
3.	Decrease in Vomiting/ sensations	-	100%
4.	Cough reduction	-	100%
5.	Sneezing reduction	-	100%
6.	Weight loss	-	100%
7.	Hair fall reduction	50%	50%
8.	Pimple reduction	30%	70%
9.	Decrease in common Disease proneness	-	100%

Fig. I Acceptance of Bay Leaf tea compare to Milk tea from day 1 to day 180

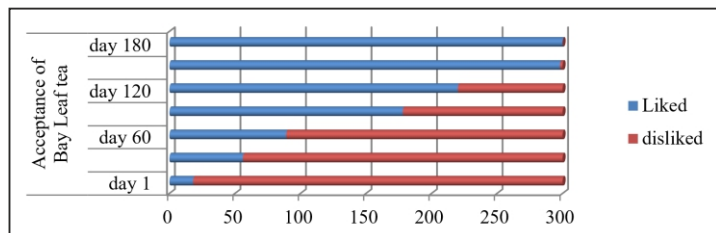
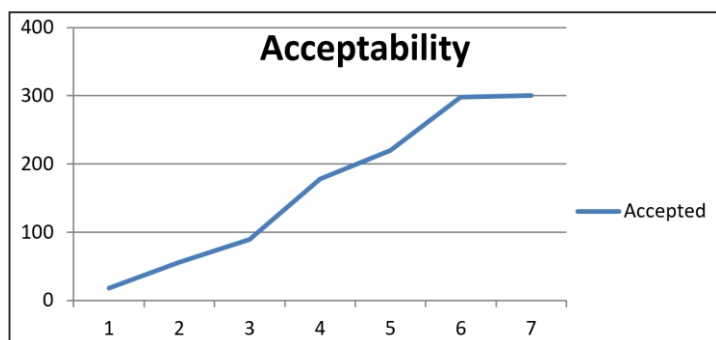


Fig. II Acceptance of Bay Leaf tea from day 1 to day 180



Statistical Analysis

Bay Leaf tea consumption was initially not appreciated but consumption over time till 6 months in replacement of milk tea was 100% accepted. The association of the Bay leaf tea over time was tested with Chi-square test and found there is significant association at 1% level of significance. Hence with increase in days the acceptability of Bay leaf Tea increased.

Table IV Chi-square test

Chi-sq (calculated)=	1056.34
Chi-sq for 6 d.f.(tab)=	18.54758

The regression study over the time of acceptability of the tea was found significant. The regression coefficient when studied with 300 sample size over 180 days has shown to be 1.74 which is significant at 1% level of significance as shown in the table V.

Table V Regression test

SUMMARY OUTPUT							
<i>Regression Statistics</i>							
Multiple R	0.98645						
R Square	0.97308						
Adjusted R Square	0.96770						
Standard Error	20.5385						
Observations	7						
<i>ANOVA</i>							
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>		
Regression	1	76262.55787	76262.56	180.7892421	4.07355E-05		
Residual	5	2109.156412	421.8313				
Total	6	78371.71429					
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>
Intercept	8.196367602	14.04474577	0.58359	0.584829215	-27.90680075	44.2995359	-27.90680075
Days	1.745840613	0.129842928	13.44579	4.07355E-05	1.412068741	2.07961248	1.412068741

CONCLUSION

Cinnamomum tamala (tejpatra) Bay leaf is most underutilized spice with Nutraceutical properties. All parts of the plant possess many major bioactive chemical constituents like Cinnamaldehyde, trans-cinnamaldehyde, 3,4,5,7-tetrahydroxyflavone, 3,3,4,5,6-pentahydroflavone (nonglycoside compounds), kaempferol, eugenol etc. which can be used for various therapeutic activities. Though it has anti-diabetic, anti-inflammatory, anti-microbial, antidiarrhoeal, anti-fungal and hepatoprotective activity it use is mainly restricted to Indian cuisine. As its rich in Phytochemicals and antioxidants its usage in the form of tea must be as daily encouraged. Value added Bay leaf products must be promoted as it possesses many pharmacological activities. Hence, with The results of present study we can conclude that over a period of time the acceptability of Bay leaf tea increased.

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