A Study on Development of Spice Flavoured Herb (Phyllanthus Niruri) Tea for Healthy Immune System

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Abstract

Advancement in Technology has paved way for many Industries to develop and provide ample opportunities to the people around the world. People are addicted to live a luxurious life hence the living style changed rapidly which resulted in many health issues. Major reason for the health issues are related to the food they consume and the water they drink. To reduce the ill effects faced by humans because of their food habits many NGO started creating awareness among the people about the health benefits derived from natural products. In recent times, there is a growing interest in the development and evaluation of natural bioactive and antioxidant active products from plant materials. Tea in general and green tea in particular, are gaining consumer attention due to a growing awareness about the health benefits derived. However the research and development of spice flavoured herb tea is very limited. The leaves of Phyllanthus niruri is reported to have good medicinal value such as hepato protective properties, anti-inflammatory agent, pharmaceutical drugs, antiviral, antibacterial, lipid lower activity anti-hyperglycemic, antidiabetic activity. However the extract of the plant is very bitter, this constitutes a challenge in formulating an acceptable herb tea. This study was carried out to develop an antioxidant rich tea with different spice flavour. Spice flavoured Phyllanthus niruri tea was prepared in six formulations with control, SFHT1, SFHT2, SFHT3, SFHT4 & SFHT5. Each formulation flavoured with pepper, cardamom, coriander seed, ginger, mint respectively. The ingredients were sorted, cleaned/washed, dried at 250°C for 8 hours (cabinet drier) and milled into powder form. SFHT1 was the most preferred in colour, flavour, overall acceptability sensory properties while the control made up of 100% Phyllanthus niruri brewed the least preferred herb tea in most of the sensory attributes. The result revealed that the spice flavoured herbal tea can be considered as powerful antioxidant sources.

Keywords: Phyllanthus niruri (keezhanelli herb), Spice Flavoured Herb Tea (SFHT), Antioxidant, Antimicrobial

I. INTRODUCTION

The tea is the most consumed beverage in the world, but its origination is attributed to china and becomes as an important food product in the world. After china, the 2nd largest producer of tea is India. These days’ consumers are cautious of their health so they are demanding for more natural and health benefitting food so tea seems to be a good vehicle in this respect because of its good taste and aroma, so researcher prepared the herbal tea. Herbal teas are offer consumed for their physical/medical effects, especially for their sedative and simulative properties. Herbal teas are mostly popular because of their fragrance, antioxidant properties and therapeutic applications. Hence it is prepared using herb keelanelli and spices like pepper, dry ginger, mint, coriander and cardamom.

A. Ginger

Is good for the respiratory system. It is good to fight against colds and flu. Ginger offers substantial protection from stroke and heart attack because of its ability to prevent blood clotting. It is very effective as a cleansing agent through the bowels and kidney. It relieves headaches, pains and helps to clear sore throats.

B. Pepper

Is the most important world spice crop. It is seen primarily as a remedy for indigestion, bloating, gas and malabsorption. Some studies have shown that it not only increases the appetite and production of hydrochloric acid but improves the digestion of many key nutrients such as the B vitamins, B-carotene and selenium.
C. Mint
Is well known for its properties related to indigestion, stomach cramp, upset stomach, and nausea and vomiting. It also can be used as appetite stimulants. It reduces hunger for a short time, but when the effects wear off the hunger returns stronger than before.

D. Cardamomum Maton
Commonly known as “cardamom” and locally known as “elachi” is a perennial herb, indigenous to INDIA. It has been used in traditional medicine for asthma, constipation, colic, diarrhea, dyspepsia, hypertension, and it is useful as antibacterial, antifungal, antiviral and diuretic.

E. Coriander Seeds
Native to south-eastern Europe, with its lemony, citrusy flavor when crushed, coriander seeds with its dietary fiber are an excellent appetizer as well as aids in digestion. Back in India the seeds are used as home remedy to soothe acidity, clear toxins from body as well as help in clearing phlegm and nasal congestion.

F. Keelanelli
(Phyllanthus Niruri) is a small tropical plant commonly found in SOUTHINDIA. By its hepato protective properties this herb of repute has attracted the attention of researchers around the world. It is used in INDIA medicine for curing various problems in the stomach, liver, and kidney. It is a bitter, astringent, stomachic, diuretic, and antiseptic. This herb involves the different type of active constituent such as lignans, glycosides, alkaloids, ellagitannis, terpenes, rutin and gallic acid (GA). It is used for antioxidant, immunostimulant and antidiabetic properties.

G. Jaggery
Jaggery is basically unrefined sugar which is obtained from raw, concentrated sugarcane juice. It is rich in many vital vitamins and minerals. Jaggery boosts immunity, keeps the body warm, helps treat cold and cough and controls the temperature of the body. This natural sweetener has been a great go-to ingredient in India since time immemorial.

In the current research Phyllanthus Niruri brewed the least preferred herb tea in most of the sensory attributes. The effort is taken to reduce the bitterness of herb with spice and jaggery combination to prepare the spice flavoured herb tea. It having several health effects with good taste and aroma organoleptic property have been evaluated by sensory analysis.

II. OBJECTIVES

- To strengthening the immunity.
- To making healthy food choice.
- To relieving stress.
- Achieving a more calm and relaxed state of mind.
- Promoting energy and wellness.

III. MATERIALS AND METHODS

A. Selection of the Sample:
The fresh herbs Phyllanthus Niruri plants are used in these studies are college from V.V.V.college campus, Virudhunagar. Spices such as black pepper, mint leaves, cardamom, ginger, and coriander seed were purchased from local market.

B. Methods:

1) Preparation of Pyllanthus Niruri (Herb) Powder and Spices:
- Well sun dried keezhanelli leaves are powdered in cabinet drier. Keep this separately.
- This is one of the main ingredients to be used along with jaggery in control sample as well as in test samples.
- Dry roast pepper corns, coriander seeds, cardamom separately for 1 – 1 ½ minutes on a low flame till the heady aroma of roasted spices fills your home. Make sure that you don’t overdo it and burn the spices as it will turn bitter and ruin the taste.
- Spread the roasted spices on a wide plate and let them cool down completely. This is an important step and make sure that you cool the roasted spices to room temperature.
- No need to dry roast dry ginger root.
- Grind these four spices separately to a medium fine powder. Don’t rush the grinding process of the spices for long time as the essential oils in the spice powder will release moisture contents which will reduce the shelf life of the powder.
2. Store these aromatic powders in an air tight jar. It stays fresh at room for a month and half. You can pop in a fridge and it will stay fresh for around 3 months.

2) Preparation of Pyllanthus Niruri (Herb) Powder:

- Tender keelaneli leaves
- Remove the root part
- Washed with water
- Dried it in a cabinet drier for 8 hours at 250°C
- Remove the leaves from the stem
- Powered it
- Sieve it
- Packed
- Stored it in dry containers

C. Spice Flavoured Herb Tea Preparation:

1) To prepare Herbal Tea (Control Sample):
   1. Take 1 cup of water in a sauce pan and bring it to a boil. Once the water comes to boil, mix in keezhanelli powder and jaggery.
   2. Let it boil for half a minute. Switch off the flame and let it rest for 1 minute for the flavour to infuse.
   3. Strain the tea through fine sieve and drink it while hot.
      Enjoy this cup of goodness at any time of the day.

2) To prepare Spice flavoured Herb Tea (Test sample):
   1. Take 1 cup of water in a sauce pan and bring it to a boil. Once the water comes to boil, mix in keezhanelli powder and jaggery.
   2. Then add the spice powder as you wish to make that specific spice flavoured tea.
      Eg: if pepper powder is added it becomes Keeshanelli Pepper flavoured tea.
   3. Let it boil for half a minute. Switch off the flame and let it rest for 1 minute for the flavour to infuse.
   4. Strain the tea through fine sieve and drink it while hot.
      Enjoy this cup of goodness at any time of the day.

The preparation is the same for all the four sample types except the 4% spice powder added in the 2nd step varies from sample to sample.

D. Formulation and Preparation of Spice Flavoured Herb Tea:

Five different samples of spice flavoured herb tea were prepared with control that makes each sample to differ from others. Tea was prepared by using 4% of herb, specific spice 6% for each sample, and 90% of jaggery.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Sample A %</th>
<th>Sample B %</th>
<th>Sample C %</th>
<th>Sample D %</th>
<th>Sample E %</th>
<th>Control %</th>
</tr>
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<tbody>
<tr>
<td>Keezhanelli powder</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
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<td>Coriander powder</td>
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<tr>
<td>Dry ginger powder</td>
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<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>Cardamom powder</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mint powder</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>Jaggery</td>
<td>88</td>
<td>90</td>
<td>90</td>
<td>88</td>
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</table>

Both the herbal te and herbal spice flavoured tea were given to a set of people (study subjects) among the population for tasting purpose.
E. Sensory Evaluation of SFHT:
The developed SFHT was subjected to sensory evaluation. It was observed that SFHT1 got highest overall acceptability than other 4 samples.

<table>
<thead>
<tr>
<th>ATTRIBUTES</th>
<th>SFHT1</th>
<th>SFHT2</th>
<th>SFHT3</th>
<th>SFHT4</th>
<th>SFHT5</th>
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<td>4.4</td>
<td>4.2</td>
<td>5</td>
<td>4.4</td>
<td>4</td>
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<tr>
<td>TEXTURE</td>
<td>5</td>
<td>5</td>
<td>4.6</td>
<td>4.4</td>
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<td>TASTE</td>
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<td>4</td>
<td>3.4</td>
<td>4.8</td>
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<td>2</td>
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<tr>
<td>OVER ALL ACCEPTABILITY</td>
<td>5</td>
<td>3.6</td>
<td>4</td>
<td>5</td>
<td>4.4</td>
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</table>

IV. RESULT AND DISCUSSION

The results of the SFHT showed that they are the excellent source of nutraceuticals. The blended formulation makes it a perfect physical and psychological health rejuvenator and offer many health benefits. Although several health benefits are also credited to Phyllanthus Niruri it has been observed that the sensory appeal of P.N herb tea is not much attractive due to the lack of their bitter taste. Hence herb tea with other spices are added for developing SFHT which not only adds to its appeal, but also palatability and their by making it a wonder product in the context of human health. As sensory appeal matters the most to consumers more than health or nutritional benefits, so the above infusion will provide them with new alternatives to traditional flavoured teas which can impart health benefits too.

REFERENCES

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