

Development of Green Tea incorporated instant herbal porridge mixture

M.A.U.P. Munasinghe, W.A.J.P.Wijesinghe, P. U. S. Pieris
Faculty of Animal Science and Export Agriculture, Uva Wellassa University of Sri Lanka

Introduction

As the second largest tea exporter in the world, the greater portion of tea is exported as bulk tea. Average price of bulk tea is lower than that of value added products (Ganewatta et al., 2005). There are several types of teas which are producing with different processing methods such as, Black tea, Green tea, Oolong tea and White tea. Among them, green tea is considered as the healthiest beverage in the world. It is loaded with antioxidants and nutrients have powerful effects on the body. (Gunnars, 2014). Because of the bitter taste of green tea, most of the consumers do not prefer to consume green tea alone. Herbal porridge which is considered indigenous to Sri Lanka, comprises with therapeutic values and nutritious. In Ayurvedic medicine *Osbekicaoctandra* (*heenbovitiya*), *Murrayakoenigi* (curry leaves) are highly recommended for the preparation of Herbal Porridge for Diabetes & heart patients in traditional ayurvedic medicine. *O. octandra* is a very valuable and widely utilized plant species in indigenous Ayurvedic medicine in Sri Lanka (Peiris et al., 2006). A study published in the (Journal of Plant food for Nutrition), found that curry leaves have a great impact on the blood sugar levels of diabetics (Sampath, 2014). It can be medicinally and economically more valuable to develop green tea incorporated instant herbal porridge mixture by using natural resources. The objectives of this research were:

- Develop a green tea incorporated instant herbal porridge mixture
- Find out the best ratio of dehydrated green leaf powder and green tea powder for herbal porridge mixture
- Determine the Shelf life of the developed product

Materials and Methods

Heenbovitiya (*Osbeckiaoctandra*) leaves and curry leaves (*Murrayakoenigi*) were steam blanched for two minutes separately and few minutes were allowed to drain excess water. Then leaves were oven dried at 60°C. Finally, well dried leaves were grinded and sieved well to obtain fine leaf powder for instant herbal porridge mixture. For the preparation of red rice for the instant herbal porridge mixture, cleaned red rice was presoaked for 4 hours and oven dried at 80°C. Cleaned soya beans were boiled for 25 minutes and oven dried at 80°C. Well dried soya beans were grinded to obtain fine powder for the porridge mixture. All the prepared ingredients were blended with three different levels of green tea powder (2.6, 3.6, 4.6g per cup) according to an Ayurvedic formula; the formula to prepare 25 cups of *Kolakanda* was rice 500g, fresh leaves 275g, soya bean 10g, raw garlic 10g, raw ginger 25g, salt 15g and water 5l (Gamlath et al., 2002).

The developed instant herbal porridge mixtures were evaluated for color, taste, aroma, texture and overall acceptability using 30 untrained panelists. The responses were recorded according to 5 point hedonic scale (5- extremely like to 1- extremely dislike). The sensory attributes were analyzed by Friedman test in MINITAB 14 statistical package and samples were compared by using 5% significant level.

Proximate analysis was carried out to determine the nutrient content of the selected best product through sensory evaluation. Total polyphenol content was determined according to the method based on ISO 14502 -1.

Detection of total plate count and yeast and mould were done during six weeks storage period. A sample of 31.4g of developed product was reconstituted for 5 minutes with 200ml of distilled water and 1ml of reconstituted sample was mixed with 9 ml of 0.1% peptone water in to test tube. After

completing appropriate dilution (10⁻³) 1 ml of the sample was introduced into plates and it was allowed to be incubated at 25°C for two days. To determine the yeast and mould count, potato dextrose agar (PDA) medium was used and to determine the total plate count, plate count agar medium was used.

Results and Discussion

Table: 1 Results of Sensory Evaluation

Sensory attributes	Treatments			
	Treatment 1	Treatment 2	Treatment 3	P- value
Color	4.833	3.500	4.167	0.000
Taste	4.833	4.167	2.167	0.000
Aroma	4.667	4.000	3.333	0.000
Texture	4.333	4.167	4.000	0.103
Overall acceptability	5.000	4.000	3.000	0.000

*All the data are given as estimated median values
Given from p-value > 0.05 significant difference

- 3.6g of green tea powder mixed sample (treatment number 2) was selected as the best treatment.

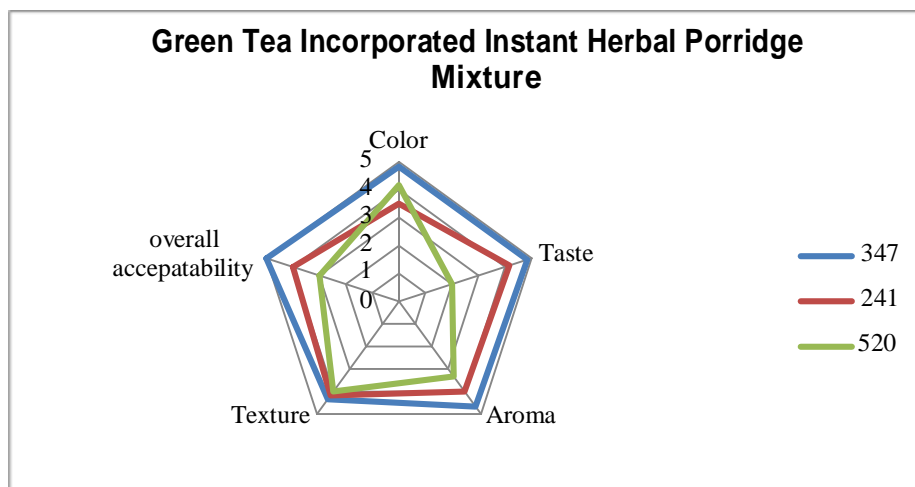


Figure 1: Results of Sensory Evaluation

Results of Proximate analysis were included in the table:2 is given below:

Table 2: Results of Proximate Analysis

Mositure	Protein	Crude Fat	Crude Fiber	Ash	Total Polyphenol
5.1%	2.1%	10%	0.6%	0.4%	573mg

Figure: 2 shows that the total plate and yeast and mould count of the product With the increasing time period of the storage. Total plate count were increased slightly but there were no colonies obtained for yeast and mould throughout the six weeks storage period.

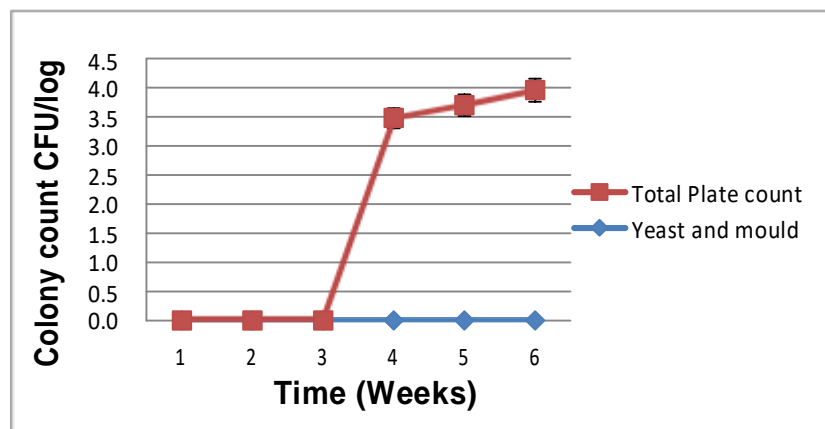


Figure 2: Microbial count of the Product

Conclusion

It can be concluded that, properly processed (according to above given procedures) green leaves, red rice and soya bean mixture has the ability to prepare porridge for consumption within 5 minutes. 3.6g from *heenbovitiya* power, 3.6g from curry leaf powder and 3.6g from green tea powder are the best green leaf powder ratio for the porridge mixture. Also product is stable under room temperature for more than one month under proper storage conditions (sealed Aluminum foil pouch under room temperature) with the moisture content of 5.1%.

References

Antioxidant properties of green tea (online) Available at: <http://authoritynutrition.com/top-10-evidence-based-health-benefits-of-green-tea/>

Ganewattha, C. and Edwards, G. W. (2000), School of Business, La Trobe University, Bundoora, Victoria, Australia

Gunathilake, K.D.P.P., Gamlath, G.G.S., (2002). Development of Instant Herbal Porridge Mixture From *Heenbovitiya* (*Osbeckia octandra* L.) Leaves. Postgraduate Institute of Agriculture, University of Peradeniya.

Jayawardhana, S., (2013). Curry Leaves: The tropical herb. Sunday observer

Tea: World's most popular drink, Incidentally (online) Available at: http://english.pravda.ru/business/companies/25-04-2013/124417-tea_most_popular_drink-0/