

**OPTIMIZATION OF BREWING CONDITIONS FOR
DIFFERENT GREEN TEA GRADES ON SCIENTIFIC
BASIS**

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
In partial fulfillment of the requirements for the award of
Bachelor of Science in Tea Technology and Value Addition

By
THARAKA SAMALI SENARATHNE

**Tea Technology and Value Addition Degree Programme
Faculty of Animal Science and Export Agriculture
Uva Wellassa University of Sri Lanka**

2015

ABSTRACT

Tea is an aromatic beverage commonly prepared by pouring hot or boiling water over cured leaves of *Camellia sinensis*. Chemical and organoleptic properties of brewed tea depend on many factors such as tea type, time, temperature and tea bag effect. Use of a fixed brewing time and temperature in tea tasting for all tea types is not effective, for extraction of full liquor character to the brew. This study is especially focused on optimizing brewing condition while suggesting suitable brewing time and temperature for Green tea. To determine the optimum brewing time and temperature for Green tea, four types of Green teas were brewed altering these parameters. Different temperature levels (80 °C, 70 °C, 60 °C) and different brewing times (1, 3, 5 min) were used to brew four different tea grades.

The data were collected using 5 point hedonic scale according to the response given by 10 experienced tea tasters. The data were analyzed using MINITAB 16 software. Kruskal –Wallis non parametric ANOVA method were used to analysis sensory data. Conover –Inmann method and Sensory profile were used for the selection of best treatment combination for colour, flavor of tea brew and colour, aroma of infused tea. Two factor factorial design was used for chemical analysis in each tea type and to determine the relationship between Polyphenol content and Antioxidant activity, Pearson correlation was used. Two sample t-test was used to determine filter paper effect for the different chemical properties.

According to the sensory analysis 80 °C and 3 min is the best temperature and time combination for brewing Green tea. High Caffeine, Antioxidant activity and a good Colour intensity were observed at the same time and temperature. But Polyphenol extraction is encouraged by longer brewing time. Also there is a positive linear relationship between Polyphenol content and Antioxidant activity of Green tea brew. There is no filter paper effect for Caffeine content in tea brew except TBS 384-I. Sencha Teas brewed from filter paper tea bags have given a low amount of polyphenol than loose tea. Similar behavior was displayed by Antioxidant activity of all green teas.

Key words: Green tea, Time, Temperature, Sensory properties, Chemical properties