SOUTHEAST ASIAN JOURNAL OF SCIENCE AND TECHNOLOGY

Volume 1, Issue 1, 2016
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

Acceptability of Matured Papaya Leaves Tea

Geraldine M. Mamaril[1], Sandra C. Claveria[2], Jobelle R. Navarro[3]
Pangasinan State University

Abstract *– Tea production is a highly competitive industry worldwide with a wide range of tea products that are available. As the consumers demand increases, product and process development must improve and upgrade providing more options and choices to meet the market needs and wants. Tea industry must escalate their game to these challenges providing more selections for meeting consumers demand. Herbal tea production is a potential industry in the Philippines. Consumption of herbal teas is a long practice by Filipinos, for it is believed to improve one's health. Common herbal teas known and consumed by Filipinos are ginger, lemongrass, guyabano, banaba, malunggay, ampalaya, pito-pito and many more are now available in the market. With thousands of different herbs available in the country utilization of locally available resource must be employed for the production of food and beverage is on the rise. The research used matured papaya leaves in the production of tea. However, three formulations were made to identify the best preparation of the matured papaya leaves tea. It was found out that the formulation 3 which has 1 proportion of matured papaya leaves tea bag and ½ cup of water steeped for 5 minutes had the highest acceptability descriptive rating. Moreover, an improvement in the taste of matured papaya leaves tea is recommended..*

Keywords *– Acceptability, Herbal tea, Matured papaya leaves, Tea production*

INTRODUCTION

Tea (*Camellia sinensis*) is a mildly stimulating drink made from the leaves of an edible plant. Globally it is one of the lowest cost, and most consumed beverage, next to the water. Across all age groups and in all level of society, tea has been consumed and one of the huge beverage market. It is considered to be the oldest beverage in the world with six main varieties available for consumption based on oxidation and fermentation techniques applied in the tea leaves. World tea production, consumption, and exportation increased significantly for the last few years.

In the Philippines, tea production is not yet common due to climate, soil acidity, and other factors. However, a local tea is known as herbal infusions or "*tisanes*" informally referred to us as a "tea" is a common beverage in the Philippines made by stepping or boiling of herbs, spices, flowers, etc. Unlike the actual tea, herbal infusions do not come from *Camellia sinensis*. It is believed that herbal teas help and strengthen the mind and body and promotes the overall well-being of a person. The most popular herbal teas in the market are malunggay, ginger, banaba, guyabano, ampalaya, pito- pito and lemongrass.

As a tropical country, we are blessed with thousands of different herbs waiting only to be re-discovered for the purpose of food production, industrial production and for medicinal use. One of them is the Papaya, a tropical tree-like- plant, belonging to a family of Caricaceae, in which there are four genera that are known to the world (Krishna,et.al. 2008).Papaya is botanically known as *Carica papaya Linnaeus*is one of the best-known species and most widely cultivated. (Krishna,et.al. 2008)Papaya is an herb with a rapid growth rate and has the ability to produce fruit for more than 20 years. Papaya has a complex means of reproduction in which plants are male, hermaphrodite, or female. (Krishna,et.al. 2008)The fruit of papaya as well as its leaves, and latex obtained from papaya plant can be used medicinally and for various other purposes. (Krishna,et.al. 2008)The seed of Papaya is used for intestinal worms, roots, and juice commonly for simple ailments such as cough or even the worst illness such as bronchitis, and other respiratory diseases. Unripe fruit turns as a cure for ulcer and impotence. (Hicks, A. 2009)The green leaf acts as an antimicrobial when applied to reduce the possibility of infection.The brown dried leaves are best used as a tonic that used to help and restore tone and invigorate systems as well as a blood purifier. Papaya is recognized for its therapeutic value because of its antiseptic quality. It has the ability to clean the intestines promoting good digestion and helps in the

Volume 1, Issue 1, 2016
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

treatment of conditions such as chronic indigestion, overweight and obesity, arteriosclerosis, high blood pressure and weakening of the heart. (Ayoola & Adeyeye, 2010) Based on the study of Mahmood, A.A in 2005 showed that the extract of *Carica papaya* leaves significantly hasten wound healing among wounded rats. The results powerfullydocumented the valuableeffects of plant extract for a rapid acceleration of wound healing process in rats. (Mahmood, A.A. 2005)According to the study of Srinivas, Lakshmi, Shama, & Reddy, 2013, Papaya possess an anti-ulcer activity. Interestingly, the seeds contain antimicrobial, anthelmintic and antiamoebic properties as well.

Papain, a milky juice substance that can be found in papaya likewise known as papaya proteinase I. It is a cysteine protease enzyme present in papaya and a major chemical compound. This is extracted from the fruit and stem latex that is commonly used in winemaking and brewing, even in the textile and tanning industries. It also aids as a remedy for dyspepsia and kindred ailments and acts as a meat tenderizer. Papaya is very rich in polysaccharides, vitamins, minerals, enzymes, proteins, alkaloids, glycosides, fats and oils, lectins, saponins, flavonoids, sterols, etc. Similarly, in the study of Boobalan, Raja Rajeswari, & Duraimurugan, in 2014, they listed the potential benefits of Papaya in medicinal use, their study test *Carica papaya* to identify it's phytochemicals as well it's antimicrobial activity. Results showed that Papaya is enriched with proteins, flavonoids, saponins, glycosides, steroids, terpenoids, alkaloids, coumarins, phenol, tannins, anthocyanin and leucoanthocyanin.Moreover, in the study of Ayoola and Adeyeye in 2010, says that Papaya contains natural compounds (annonaceous acetogenins) that possess highly anti-tumor and pesticide properties. The tree produces a natural self-defense compound that makes it highly resistant to insect and disease infestation (Ayoola and Adeyeye, 2010).

In the study of Ayoola and Adeyeye (2010) entitled Phytochemical and nutrient Evaluation of Carica Papaya (Pawpaw) Leaves showed that the plant leaves is a good source of the vitamins' thiamine (B_1), riboflavin (B_2) and ascorbic acid (C).Also, a mineral analysis was also employed in their study in which calcium, magnesium, sodium, potassium, manganese are found in green leaves while iron could be found in yellow leaves. They concluded that papaya leaves could be worked in the herbal treatment of various diseases. Also, a potential source of beneficial elements for drugs formulation.Papaya leaves are high in beta carotene, calcium, niacin, and vitamin C. According to Food Composition Table (1997), in every 100 grams of papaya leaves, it contains 16,130 µg of beta-carotene, 373 mg of calcium, 2.1 mg of niacin and 181 mg vitamin C.

The present study was undertaken based on the observation in our local community in which the leaves of papaya has no important used. The relative lack of information on the papaya leaves as a possible herbal tea contributed to the desire to undertake this study because of the promising properties and nutrients found in Papaya. The use of matured papaya leaves in tea production as research is conducted.

OBJECTIVES OF THE STUDY

The objective of the research is to produce and determine the acceptability of matured papaya leaves tea. Specifically, it is endeavored to identify the level of acceptability of the matured papaya leaves tea in terms of color, flavor or taste and aroma of various formulations prepared.

MATERIALS AND METHODS

The research implemented experimental and descriptive research. Various formulations of matured papaya leaves tea were prepared and determined their acceptability using a score-card following the 5-Hedonic scale.

Preparation of Various Formulations

Standard procedure in making matured papaya leaves tea was followed. The matured papaya leaves were harvested from home garden in Lingayen, Pangasinan. For formulation 1 (F1) contained 1 proportion of matured papaya leaves tea in ½ cup of water steeped for 3 minutes; Formulation 2 (F2) had 1 proportion of matured papaya leaves tea in ½ cup of water steeped for 4 minutes and lastly Formulation 3 (F3) had 1 proportion of matured papaya leaves tea in ½ cup of water steeped for 5 minutes. The only difference among the different formulation was the duration of steeping time. Commercially available green tea out in the market was used as a comparison for the determination of the sensorial characteristics of matured papaya leaves tea.

Determination of Acceptability of the Various Formulations

The Five-Point Hedonic Scale was used to determine the acceptability of the various formulations. The following arbitrary weights with the corresponding

SOUTHEAST ASIAN JOURNAL OF SCIENCE AND TECHNOLOGY

Volume 1, Issue 1, 2016
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

values descriptive values were 5 - Highly Acceptable; 4 – Moderately Acceptable; 3 – Fairly Acceptable; 2 – Poorly Acceptable and 1 – Not Acceptable.

Statistical Treatment

Average Weighted Mean (AWM) was used to determine the best formulation.

Respondents of the Study

There are 38 randomly selected respondents in which 32 are BSND students, 3 BSND faculty members and 3 non-BSND faculty members of Pangasinan State University, Lingayen Campus evaluated the various formulations of matured papaya leaves tea.

RESULTS AND DISCUSSION

Acceptability of various formulations of matured papaya leaves tea was entered on the sensorial characteristics color, flavor or taste and aroma.

Table 1. Average Weighted Mean of the Acceptability of Various Formulations of Matured Papaya Leaves Tea Based on Sensorial Characteristics

Formulation	Color	Flavor or Taste	Aroma	TWM	Descriptive Equivalents	Ranking
Formula 1	2.8684	2.6840	2.6050	2.7191	Fairly Acceptable	3
Formula 2	3.5787	3.1840	3.0524	3.2717	Fairly Acceptable	2
Formula 3	3.9202	3.4207	3.3682	3.5697	Moderately Acceptable	1

Formulation 3 which has 1 proportion of matured papaya leaves tea in ½ cup water steeped for 5 minutes had the highest average mean followed by Formulation 2 and 1 making Formulation 3 as the best formulation with the total average weighted mean of 3.5697 with a corresponding description of moderately acceptable. This means that the longer the duration of matured papaya leaves tea steeped in warm water gives a better result. However, based on the taste-test survey form with the respondents, suggest that improvement in the flavor or taste must be made. Therefore, there is a need to add other substance or ingredients in the production of matured papaya leaves tea to make it more acceptable although it has a high potential as herbal tea.

CONCLUSION AND RECOMMENDATION

The formulated matured papaya leaves tea has an average acceptable descriptive rating which suggests that an overall improvement must be conducted to improve the quality of the matured papaya leaves tea. Moreover, the matured papaya leaves tea has a strong potential to be a herbal tea that provides nourishment as well as health benefits. The best formulation was Formulation 3 which has 1 proportion of matured papaya leaves tea in a ½ cup of water steeped for 5 minutes.

REFERENCES

America, S. (n.d.). Phytochemical Examination of the Leaves of Carica papaya Linn. (pp258-259).

Ayoola, P. B., & Adeyeye, A. (2010). Phytochemical and Nutrient Evaluation of Carica Papaya (Pawpaw) Leaves. Ijrras, 5(3), 325. Retrieved from https://www.researchgate.net/profile/Babatunde_Ayoola/publication/228547111_Phytochemical_and_nutrient_evaluation_of_Carica_papaya_Pawpaw_leaves/links/00b7d51f8f4c0b82a6000000/Phytochemical-and-nutrient-evaluation-of-Carica-papaya-Pawpaw-leaves.pdf

Boobalan, T., Raja Rajeswari, P., & Duraimurugan, M. D. (2014). Antimicrobial activity and phytochemical screening of Cynodon dactylon and Carica papaya. Research in Biotechnology, 5(5), 21–31. Retrieved from www.researchinbiotechnology.com

Chang, K. (2015). World tea production and trade Current and future development. Food and Agriculture Organization of the United Nations, 1–17.

Claudio,V.S.,Ruiz,A.J.,De Leon, S.Y.,Chavez, L.D.L., (2014). Basic Foods for Filipinos 5th Edition. Merriam & Webster Bookstore, Inc. Manila, Philippines

Gambera, L., Piomboni, P., Morgante, G., De Leo, V.,

Volume 1, Issue 1, 2016
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

Serafini, F., & Campanella, G. (2008). Sperm quality improvement after natural anti-oxidant treatment of asthenoteratospermic men with leukocytospermia. Asian Journal of Andrology, 10(2), 201–206. https://doi.org/10.1111/j.1745-7262.2008.00356.x

Hasimun, P., Suwendar, & Ernasari, G. I. (2014). Analgetic Activity of Papaya (Carica papaya L.) Leaves Extract. Procedia Chemistry, 13, 147–149. https://doi.org/10.1016/j.proche.2014.12.019

Hicks, A. (2009). Current status and future development of global tea production and tea products. Review Article, 12(November 2008), 251–264. Retrieved from http://www.teainstitutemfu.com/ducument/d11.pdf

Krishna, K. L., Paridhavi, M., & Patel, J. A. (2008). Review on nutritional, medicinal and pharmacological properties of papaya (Carica papaya linn.). Indian Journal of Natural Products and Resources, 7(4), 364–373. https://doi.org/0975-6299

Mahmood, A A, S. &Salmah I. (2005). Wound healing activity of CP aqueous leaf extract in rats...pdf. International Journal of Molecular Medicine and Advance Sciences.

Owoyele, B. V., Adebukola, O. M., Funmilayo, A. A., & Soladoye, A. O. (2008). Anti-inflammatory activities of ethanolic extract of Carica papaya leaves. Inflammopharmacology, 16(4), 168–173. https://doi.org/10.1007/s10787-008-7008-0

Pressman, D. (1965). Paired labeling with I-125 and I-131. Advances in Tracer Methodology, 2(16), 277–278.

Portugal, T. R., et.al.(1997).The Philippine Food Composition Tables 1997. Food and Nutrition Research Institute. Department of Science Technology. Metro Manila, Philippines.

Saeed, F., Pasha, I., Shafique, B., Khan, A. A., Nasir, M. A., Arshad, M. U., … Naz, R. (2013). Nutritional and Phyto-Therapeutic Potential of Papaya (Carica Papaya Linn.): An Overview . International Journal of Food Properties, 17(7), 1637–1653. https://doi.org/10.1080/10942912.2012.709210

Srinivas, T. L., Lakshmi, S. M., Shama, S. N., & Reddy, G. K. (2013). Medicinal Plants as Anti-Ulcer Agents. J. Pharma. …, 2(4), 91–97. Retrieved from http://www.phytojournal.com/vol2Issue4/Issue_nov_2013/23.1.pdf

Yogiraj, V., Goyal, P. K., & Chauhan, C. S. (2015). Carica papaya Linn : An Overview, 2(5), 1–8.

Zhou, K., Wang, H., Mei, W., Li, X., Luo, Y., & Dai, H. (2011). Antioxidant activity of papaya seed extracts. Molecules, 16(8), 6179–6192. https://doi.org/10.3390/molecules16086179