IJAMS
INTERNATIONAL JOURNAL OF ADVANCED MULTIDISCIPLINARY STUDIES
Volume II, Issue 1 January 2022, eISSN: 2799-0664

Sweet Potato (Ipomea batatas L. Jam) As Bread Filling

JAMES ARNIE R. WENCESLAO, APPLE ROSE M. WENCESLAO, RONALD M. RAMIREZ AND BERENICE T. ANDRIANO
Associate Professor III
Cebu Technological University- San Francisco Campus
San Francisco, Cebu
jamesarnie.wenceslao@ctu.edu.ph

Abstract — The study aimed to find out whether sweet potato locally known as "camote" could be a sweet filling to bread to improve its flavor, palatability and nutritive value.
The bread preparation was treated in five treatments where treatment 0 (T0) is the control, milk and butter as filling (Spanish bread) T1 is 75% milk and 25% camote as bread filling; T2 is 50% milk and 50% camote); T3 is 35% milk and 65% camote and T4 which is 25% milk and 75% camote. All the treatments were subjected to organoleptic tests in terms of taste, texture, flavor, odor and general acceptability by the different panelists who are students and teachers. Results showed that in terms of taste, flavor, odor, texture and general acceptability, all the treatments (T1 to T4) were rated like very much with average range rating of 7.25 to 7.86. The control treatment (T0) is rated like moderately (6.79). Results further showed that treatment 3 (35% milk and 65% camote as filling to bread) got the highest average rating of 7.86 like very much followed by T1, T2 and T4. ANOVA results show that there is no significant difference on all the attributes and treatments and that computed Ft is higher in terms of odor attribute (5.65) and small in taste attribute (1.37).

Keywords — Camote, Milk, Treatments, Organolyptic test, ANOVA

I. Introduction

Education is a powerful tool to bring change in the lives of people. This may shape and transform individuals as it preserves and transmits the culture of a particular group or society, in general. Education enriches culture and culture defines education. Thus, culture and education are mutually interdependent. The dynamics of these two essential elements in human life individually and collectively directly move one's society as it brings about changes in families, communities, and institutions (Kapur, 2018).

II. Methodology

Sweet potato (Ipomoea batatas L.) is an important staple food crop and highly produced in the Asian countries. It is the sweetest tasting root vegetable dicotyledonous plant that belongs to the family Convolvulaceae (Giango & Añero, 2017). It is considered as one of the most significant food crops due to its health contributing principles in tubers and leaves. Sweet potatoes locally

called as "camote" in Camotes Islands, Cebu in which historically the name Camotes derived from camote during the Spanish era. Production of camote in Camotes Islands is sponsored by the Department of Agriculture where planting of crops maintained for market. The farmers are also distributed with different varieties of camote root crops for cultivation and farming.

Camote is the world's healthiest food, this is according to the statement of North Atlantic Human Nutrition Research Center on Aging. It is also good for diabetics. It helps stabilize blood sugar levels by increasing adiponectin, an important factor of insulin metabolism. It has moderate glycemic index of 50.

Product development involves the modification or creation of a new product in which sweet potato as bread filling was tested by determination of its acceptability to the consumer panelists. This could be a great potential in the market and to household's community contributing to food resilience in the country considering its health benefits and nutrient composition. The study determines its acceptability of sweet potato as bread filling and the level of its filling concentration to bread.

Literature Review

Sweet potato (Ipomoeae batatas L.) is an important staple food crop and highly produced in the Asian countries. It is the sweetest tasting root vegetable dicotyledonous plant that belongs to the family Convolvulaceae (Giango & Añero, 2017). It is considered as one of the most significant food crops due to its health contributing principles in tubers and leaves. Across China and Southeast Asian countries, the food industries are increasingly using sweet potato in several value-added food products. Processed sweet potatoes are common in the countries of Indonesia, Philippines, Thailand, Malaysia and Vietnam. The tubers or roots of sweet potato are eaten after boiling or baking, thus increasing the sugars during these processes. In the Philippines it plays a major role in the food security system where its production in 2016 was 127.85 thousand metric tons (PSA, 2016). It is now gaining popularity due to the increased consumer awareness of healthy and nutritious diets as well as interest in the food industry using its raw materials. It is considered a significant crop for climate adaption and disaster recovery/ resilience in many areas in the country during disasters (DOST-PCAARD Proceedings, 2015).

Several studies and developments of sweet potatoes are done in terms of production. But a greater need to undergo processing initiatives or product development of sweet potato to meet the demands of the market as it is a target food product in disaster affected areas as recommended by DOST-PCAARD. Product development studies of sweet potato were conducted in Lira district of Uganda by Owori and Haginemana (2005). The study has the purpose of enhancing the role of sweet potato for income generation especially for small farmers and alternative nutritious food snack item. In the study results showed that in the production of sweet potato baked snack products it is possible to substitute to either 40-60% fresh grated/boiled sweet potato and or 30% sweet potato flour for wheat flour in fried products. It was found out that the general acceptability of the

sweet potato products in these levels were found acceptable by the consumer panelists as well it gained good demand in rural markets, schools and within the municipality. Furthermore, results demonstrated that sweet potato processing technology can improve the income generating potential of small-scale snack product enterprises. It has proven that commercialization of root crops sustains livelihoods of small holder farmers as they engage in producing crops for supply in the production of snack item.

Oluwole et al., (2012) study the possibility of producing acceptable fermented sweet potato flour. The study has revealed the potentials and possibilities of utilizing fermented sweet potato flour as meal and results showed that the product could serve as an alternative to the popular fermented cassava flour that is conventionally utilized domestically in form of meal. The process technology involved required minimum processing equipment of fermentation vessels, peeling and chipping equipment as well as a solar/tray/cabinet. Further, the study revealed that the crude protein contained (4.27%) and carbohydrate (84.81%) contents of the fermented sweet potato flour. Fat, crude fiber and ash contents of the fermented flour were significantly lower than in the raw sweet potato. Moreover, the study revealed that during the fermentation period, the microbial profiles of the fermenting medium increase with increase in time while the pH of the medium decreases with time. The study revealed the nutritional quality as well as the pasting characteristics of the fermented sweet potato flour that has a great influence and implication on its utilization as a food security crop.

III. Results and Discussion

The following were the results of the study.

Table 1. Summary Table on the Descriptive rating of Sweet Potato bread fillings

Treatments	Attributes						
	Taste	Texture	Flavor	Odor	Gen. Acceptability	Average	Descriptive rating
T_{01}	6.95	6.70	6.95	6.50	6.85	**6.79**	Like moderately
T_{02}	6.70	6.55	6.45	6.40	6.80	**6.58**	Like moderately
T_1	7.20	7.85	7.70	7.55	7.65	**7.59**	Like very much
T_2	7.05	7.40	7.35	7.35	7.75	**7.38**	Like very much
T_3	7.80	7.85	7.75	7.80	8.10	**7.86**	Like very much
T_4	7.05	7.20	7.15	7.25	7.60	**7.25**	Like very much

Table 1 is the summary table of the overall rating of every treatment in all the attributes where it can observed that T_3(35% milk and 65% camote as filling to bread) got the highest average rating of 7.86 like very much followed by T_1(75% milk and 25% camote as filling to bread) then T_2(50% milk and 50% camote as filling to bread) and T_4(25% milk and 75% camote as filling to bread). All the control groups were rated like moderately.

Discussions

The camote were used as bread fillings and was subjected to sensory evaluation of the different consumer panelists group. Results showed that in terms of taste attribute the control treatments (the Spanish and mongo bread) which is bought from the market rated as like moderately with 6.95 and 6.70 means. For the treatments, T_3(35% milk and 65% camote as filling to bread) got the highest mean with descriptive rating of like very much followed by T_1(75% milk and 25% camote as fillings to bread). T2 and T4 got the same rating both numerical and descriptive (7.05; like very much).

This implies that T_3(35% milk and 65% camote as filling to bread) is the most preferred product by consumer panelists for taste attribute. During the sensory evaluation of the panelists in terms of texture of the product result showed that T_1(75% milk and 25% camote as filling to bread) and T_3(35% milk and 65% camote as filling to bread) got the same rating of 7.85 (like very much) followed by T_2(50% milk and 50% camote as filling to bread) which is 7.20 numerical rating. For the control group a rating of 6.70 and 6.55 with rating of like moderately.

This implies that the experimented product of camote delicacy as filing to bread is more acceptable and liked very much by the panelists than the commercial one which is the Spanish bead and mongo bread which bought from the market.

In terms of flavor attribute, it can be noticed in all the treatments that T_3(35% milk and 65% camote as filling to bread) got the highest mean of 7.75 rating which is like very much followed by T_1(75% milk and 25% camote as filling to bread) and the least among the treatments is T_4(25% milk and 75% camote as filling to bread) with a numerical rating of 7.15. Hence, the product is more acceptable and delicious than the commercial bread of Spanish and mongo bread.

For the flavor attribute, it is revealed that still the T_3(35% milk and 65% camote as filling to bread) got the highest mean of 7.80 like very much followed by T_1(75% milk and 25% camote as filling to bread). All the control group were rated as like moderately.

The general acceptability of the of the camote as bread fillings product shows that T_3(35% milk and 65% camote as filling to bread) got the descriptive rating of like extremely with a rating of 8.10. The least is T_1(75% milk and 25% camote as filling to bread) and T_4(25% milk and 75% camote as filling to bread).

For the overall rating of every treatment in all the attributes it can observed that T_3(35% milk and 65% camote as filling to bread) got the highest average rating of 7.86 like very much followed by T_1(75% milk and 25% camote as filling to bread) then T_2(50% milk and 50% camote as filling to bread) and T_4(25% milk and 75% camote as filling to bread). All the control groups were rated like moderately.

ANOVA results showed that there is no significant difference on all the attributes and treatments. Results further showed that computed Ft is great in odor attribute (5.65) and small in taste attribute (1.37).

IV. Conclusion

The product, camote as bread filling is highly acceptable and can be a potential snack product for commercialization considering its health benefits as well as availability in the locality.

V. Recommendations

That further studies be conducted in the Shelf-life studies of the bread with camote fillings to determine the number of days the bread be consumable to the public. Good packaging of the product should also be determining and studied further in order to have a presentable camote bread delicacy. Nutrient analysis of the product should also be determined.

REFERENCES

[1] Giango, Wilma C. and Marjorie B.Añero (2017). Wonton wrapper in sweet potato
[2] (Ipomoea batatas) and durum four. Academia Journal of Agricultural Research 5(10):261-270.
[3] Oluwole, Oluwatoyin B., Sulaimon Babatunde Kosoko, Samuel Olusina Owolabi,
[4] Morufat Justina Salami, Gloria Nwakaegho Elemo, and Samuel lakitan Akande Olatope (2012), Development and Production of Fermented Flour from Sweet Potato (Ipomoea batatas L) as a Potential Food Security Product. Journal of Food Science and Engineering 2(2012) 257-262.
[5] Owori, C., and Hagenimana, V. 2001. Development of Sweet Potato snack
[6] products in rural areas: Case study of Lira district of Uganda. In: Root crops in the 21st century: Proceedings. 7. Triennial Symposium of the International Society for Tropical Root crops-Africa Branch (ISTRCAB) 699-707.
[7] Livestock and Poultry: World Markets and Trade." Circular Series DL&P 2-06, Foreign Agricultural Service, United States Department of Agriculture, October 2006. Retrieved on 2007-08-15.
[8] Solomon, Charmaine (1996). Encyclopedia of Asian Food. Melbourne: William
[9] Heinemann Australia. p. 288.ISBN 0-85561-688-1.
[10] Tropp, Barbara (1982). The Modern Art of Chinese Cooking. New York: Hearst Books. p. 183.ISBN 0-688-14611-2.
[11] Thompson, Michael D., "'Everything but the Squeal': Pork as Culture in Eastern North
[12] Carolina," North Carolina Historical Review, 82 (Oct. 2005), 464–98. Heavily illustrated. Raloff, Janet. Food for Thought: Global Food Trends. Science News Online. May 31, 2003.
[13] http://www.carewellbeing.com/important-food nutrition.html).
[14] http://www.carewellbeing.com/important-food-nutrition.html
[15] http://www.everydayhealth.com/diet-nutrition/life-enhancing-reasons-to-eat-fish.aspx
[16] http://sweetpotato.wikipedia.the free encyclopedia//downloaded5/2/2013).
[17] (http://lifestyle.inquirer.net/wellness/wellness/view/20101026-299724/Kamote-has-more-health--benefits-than-white-rice
[18] http://gustokohealthyka.blogspot.com/2012/11/health-benefits-of-sweet-potato-or.html
[19] (www.foodrecap.net/health/camote-healthiest/).
[20] Sunstar Super Balita published3/14/2013 by Rachel Ann Doreen Nadal
[21] http://WHFoods:sweet potatoes.com/5/2/2013.