



# Formulation and Quality Shelf Life Evaluation of Squash Food Products

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**Abstract** – Squash is one of the fruit vegetables that grows abundantly in the locality and that there are times of oversupply, thus these are only used as feeds to animals or just go to waste. Squash is a member of the curcubita family that has variety of textures, sizes, shapes and range in flavour. It is considered to be very rich in nutrients needed by our body particularly beta-carotene. It is a good source of Vitamin A and C. It also contains calcium and iron and it has very low calories. (De Leon, 2001). With these statements, the researcher conducted a study on the formulation of squash products such as cookies, tarts, butterscotch and “puto”. It also determined the shelf life or the keeping quality of the products. The standard recipes of cookies, tarts, butterscotch and “puto” were used as the basis for the formulation of the experimental samples. There were three (3) samples of formula or recipe prepared using different amount of squash for each product. These were prepared and coded properly for identification purposes during the evaluation process. The products were evaluated using a score card of sensory evaluation by panel of evaluators. The score card of sensory evaluation was used to determine the best formula in terms of taste, color, aroma, texture and appearance using a Nine-Point Hedonic Scale. Frequency counts, percentages and average weighted mean were used to treat the data gathered. The squash food products as a result of this study were found out to be very liked by the panel of evaluators in terms of taste, color, aroma and texture and stable for a week even without the addition of preservatives

**Keywords** – Cookies; tarts; butterscotch; “puto;” sensory evaluation

## INTRODUCTION

With the nutritional value of squash and its availability in the community, a study was conceptualized in order to process it in a different way where it can be commercialized. The squash is cooked as vegetable dish and somehow there are people particularly children do not like to eat it. The research considered the squash as main ingredient in preparing tarts, cookies, butterscotch and appearance. The products produced are based on the standard recipe of tarts, cookies, butterscotch and “puto.” Boiled and mashed squash was used in different quantities in the sample products.

The tarts, cookies, butterscotch and “puto” are well liked by children and old alike. The tarts, cookies and butterscotch are baked while the “puto” is steamed. These are served as snacks or as desserts that is why the researcher thought of using squash to prepare these food products.

The study was conducted for the purpose of determining the best formula of the identified squash food products in terms of taste, color, aroma, texture

and appearance. It also determined the keeping quality of the products

## MATERIALS AND METHODS

Boiled and mashed squash, sugar, eggs, shortening, salt, eggs, baking powder and all purpose flour were used as ingredients. Gas range, steamer, tart pans, layer pans, “puto” molders, mixing bowls, wooden spoons, sifter, measuring cups, measuring spoons, utility trays, spatula, rubber scraper, knife, casserole, forks and plastic wrappers.

### Preparation of Squash Tarts

Tarts have two parts: the filling and the crust. The filling is prepared by boiling the squash, scooping the flesh and mashing it using a fork. Measure and combined with the other ingredients. There were three formulae used to determine the best filling, TA1, TA2 and TA3 with the different amount of mashed squash.

In the case of the crust, there were also three formulations to determine the best which is comparable to the standard recipe in terms of taste, color, aroma and texture. The sample recipes were marked as CT1, CT2



and CT3. Different amount of mashed squash was used.

#### **Formulation for Squash Cookies**

For the cookies, the squash was prepared as in butter cookies. There were also three formulae prepared to determine the best according to taste, color, aroma and texture. The formulae were coded as SC1, SC2 and SC3 with the different quantity of mashed squash.

#### **Formulation for Squash Butter Scotch**

Butterscotch is actually another type of cookies under the category bar cookies. The squash butter scotch was also prepared using three replications using different amount of mashed squash. BS1, BS2 and BS3 were the codes to determine the best formula.

#### **Formulation for Squash Puto**

“Puto” is a native delicacy which is made of wheat or rice flour with sugar, eggs and leavening agent that is steamed. In this study, the samples used the flour and were also added with different amount of boiled mashed squash. The samples were coded SP1, SP2, and SP3.

#### **Data Gathering Procedure**

The four (4) food products with their three samples were subjected to sensory evaluation by panel of evaluators in terms of taste, color, aroma and texture. The panel of evaluators include students, faculty and non-teaching staff of Pangasinan State University, Lingayen Campus. The evaluators were selected through random sampling.

#### **Subjective (Sensory) Evaluation of The Baked Products (Tarts, cookies, butterscotch and puto)**

For statistical analysis of sensory data, the members of the panel were asked to evaluate and rate the products with the following rating using the Nine (9) hedonic scale with following descriptions: 9 – like extremely; 8 – like very much; 7 – like moderately; 6 – like slightly; 5 – Neither like nor dislike; 4 – dislike; 3 – dislike moderately; 2- dislike very much; and 1 – dislike extremely.

The evaluators are given score cards to which they will indicate their evaluation and rating on the products in terms of taste, color, aroma and texture.

The ratings given by the member of the panel were analyzed using statistical tools such as frequency counts and average weighted mean.

### **DETERMINATION OF KEEPING QUALITY OF SQUASH FOOD PRODUCTS**

After which the best squash products were identified, the researcher proceeded with evaluation of the shelf life or keeping quality of the products. The baked tarts were packed in plastic wrapper and kept for 3 days, 5 days, 7 days and beyond 9 days to determine whether it has the same quality when it is freshly baked. The same process was applied to the other three (3) products, cookies, butterscotch and puto.

Recording was done if there is a change in taste, color, aroma and texture starting on the third day, on the fifth day and on the seventh day and so on. The same score card was used by the panel of evaluators.

The data gathered on the ratings given by the panel of evaluators were analyzed using statistical tools such as frequency counts and average weighted mean.

### **RESULTS AND DISCUSSION**

#### **Best Formula of Squash Food Products**

The formula that got the highest score for tart filling is TA1. The weighted mean obtained for the squash tarts in terms of taste is 7.86; color is 7.57; aroma is 7.57; the texture is 7.43 and the appearance is 7.55. The overall score is 7.60 which mean the taste of the squash filling is very much like by the evaluators. It has smooth taste and texture and is yellow in appearance.

Likewise, the formula with the highest score for tart crust is CT3. The weighted mean score for taste is 7.46; color is 7.67; aroma is 7.48; the texture is 7.38; and the appearance is 7.68. The overall weighted mean of CT3 is 7.53 which indicated that the taste the squash tart is very much like by the panel of evaluators. The crust is flaky and tender which is a desirable characteristic of a pie crust.

In the case of squash cookies, the best formula found out to be very much like is SC2. The overall weighted mean computed was 7.60, to which the taste is 7.58, color is 7.69; aroma is 7.62; while texture and appearance is 7.46 and 7.67, respectively. The cookies are crisp, and have a distinct taste of a squash.

For the squash butterscotch, the best formula is BS2. The mean score for taste is 7.65; 7.59 for the color; 7.63 for the aroma and 7.65 and 7.63 for the texture and appearance, respectively. The squash butterscotch is very much like by the panel of evaluators because the weighted mean is 7.63. The



color is attributed by the natural yellow color of squash, the taste is creamy and the texture is soft inside and crusty on the outside.

For the squash puto, the best sample is SP1. The panel of evaluators extremely like the squash “puto.” The obtained mean score for taste is 8.53; color is 8.66; aroma is 8.36; texture is 8.56 and appearance is 8.50 with the overall weighted mean of 8.52. The “puto” has a natural color of squash which is yellow.

### **Shelf Life and Keeping Quality of Squash Food Products**

Based from the statistical results on the rating given by the panel of evaluators, the tarts is still comparable with the freshly baked product even if it is already one week provided that the tarts are wrapped properly and are kept in a dry place.

The cookies are found to be the most stable squash food products even if kept for more than nine (9) days particularly if kept in jars. It has the qualities of freshly baked cookies.

For the squash butterscotch, the product can be kept for five (5) days. It is still of good quality within five days. At the 6<sup>th</sup> day it started to deteriorate in terms of texture although the taste, and aroma is still good and the color and appearance does not change.

The squash puto is stable in terms of taste, color, aroma, texture and appearance for three (3) days. This is attributed by the moisture content of the product because of the method of cooking used is steaming. Usually steamed products have short period of keeping quality because of the syneresis which is the separation of liquid from gel caused by contraction. This can be remedied by subjecting the puto again to heat through steaming.

### **CONCLUSION AND RECOMMENDATION**

The addition of boiled mashed squash with the standard recipes of food products is possible to produce a variety of food products, such tarts, cookies, butterscotch and “puto.” Since squash is considered nutritious the result of this study yielded a good result.

The keeping quality varies according to the type of squash food product. The most stable is the squash cookies, followed by squash tarts and squash butterscotch. The “puto” have a short keeping quality as expected.

It is recommended that the result of the study of squash food products be submitted for intellectual property rights (IPR) and eventually used for commercialization as campus income generating project.

It is also suggested that a research study be conducted for the packaging of the products for better quality and presentation.

### **REFERENCES**

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