



## Acceptability of turmeric (*Curcuma longa* L) powder polvoron

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### Abstract

This study aimed to determine the sensory acceptability of turmeric (*Curcuma longa* L) powder as the main ingredients in making polvoron as to taste, odor/aroma, color, texture, and general acceptability. A panel of thirty evaluators from members of a particular organization purposely picked, which consist of five fathers, ten mothers, and fifteen teenagers. It employed the experimental research design. In determining the acceptability of different samples, a 9 point hedonic scale was used, Mean and Standard Deviation in determining the level of acceptability and Analysis of Variance (ANOVA) in determining significant differences among samples. Three samples were used with different proportions. Sample A composed of 15 grams turmeric powder, Sample B consisting of 7.5 grams turmeric powder and Sample C is composed of 4.2 grams turmeric powder, with same proportion of ingredients such as 200 grams all-purpose flour, 150 grams white sugar, 4 grams lemon extract, and 200 grams butter. The results revealed that the most acceptable composition among the three samples is sample C in terms of taste, odor, color, texture, and general acceptability. Based on the results of this study, the researcher concluded that there is a significant difference between the three samples in terms of its sensory evaluation. The researchers recommended that the most acceptable product must be tested for shelf-life and also include the technology readiness of the product. It is also recommended to apply the product and the process for utility model certification before transferring it to the community or for commercialization.

**Keywords:** turmeric powder, polvoron, level of acceptability, sensory evaluation

### Introduction

According to Eddie's Goodies in their article last 2014, "Polvorón (otherwise called pulburon/polboron in Tagalog) is a sort of shortbread and occasion delicacy that started from the Iberian Peninsula. It is created for the most part in Spain and Latin America and is a well-known sweet in the Philippines". "Polvo," which means powder in Spanish truly means "powder" bite or treat; consequently "powder treat." It is made by consolidating toasted flour, milk powder, sugar, and spread. The Moors (Arabs) acquainted it with Spain during the Spanish Inquisition and was "made utilizing pork fat". In the Philippines, spread or margarine is utilized, albeit a few plans call for olive oil and even enhanced spread. There are numerous assortments of the polvorón, and it arrives in a wide exhibit of flavors—pinipig (rice crispies), cashew, ube (purple yam), treats and-cream, and some more, (Tamban, V.E., et. al., 2020) <sup>[1]</sup>.

Turmeric (*Curcuma longa* L.), began from India and found in South American nations, is a significant monetary yield developed for its underground rhizomes which are generally utilized in drugs, restorative businesses, toppings, curry stuffs and in strict and favorable events. It has been customarily utilized in indigenous natural meds because of its organic exercises. Because of its simple absorbability, turmeric has been utilized in industry to get ready exceptional nourishment and youngsters' nourishments. Turmeric has for some time been known in India and numerous different nations as a significant dietary source notwithstanding their utilization in conventional medication for twisted mending to fix aggravation and stomach acidity (Jyothi, Moorthy, et.al., 2007) <sup>[9]</sup>.

Turmeric contains curcumin, a substance with solid quieting and cell support properties. Most assessments used turmeric

expels that are organized to consolidate a great deal of curcumin. Potentially Effective for High fever. Taking curcumin, a compound found in turmeric appears to lessen high fever side effects, for example, wheezing, tingling, runny nose, and clog. It very well may be useful to gloom. Most accessible research shows that taking curcumin, a synthetic found in turmeric, decreases wretchedness manifestations in individuals previously utilizing a stimulant (Cui, L., Miao, J., and Cui, L., 2007) <sup>[5]</sup>.

Turmeric appears to bring down degrees of blood fats called triglycerides. The impacts of turmeric on cholesterol levels are clashing. There are a wide range of turmeric items accessible. It isn't known which ones work best (Chiu, J., Khan, Z. A., Farhangkhoe, H., and Chakrabarti, S., 2009) <sup>[2]</sup>. Liver malady not brought about by liquor (nonalcoholic greasy liver illness). Research shows that taking turmeric remove decreases markers of liver injury in individuals who have a liver illness not brought about by liquor. It additionally appears to help forestall the development of increasingly fat in the liver in individuals with this condition (Ciftci, O., Ozdemir, I., Tanyildizi, S., Yildiz, S., and Oguzturk, H.2011) <sup>[4]</sup>.

Some exploration shows that taking turmeric removes, alone or in mix with other home grown fixings, can decrease torment and improve work in individuals with knee osteoarthritis. In some examination, turmeric worked about just as ibuprofen for diminishing osteoarthritis torment. Yet, it doesn't appear to fill in just as diclofenac for improving torment and capacity in individuals with osteoarthritis (Chopra, A., Lavin, P., Patwardhan, B., and Chitre, D., 2004) <sup>[3]</sup>.

Premenstrual disorder (PMS). Research shows that taking a turmeric separate day by day for seven days before a

menstrual period and proceeding for three days after the period closes improves agony, state of mind, and conduct in ladies with PMS, (Samira K. *et al.*, 2015) [10].

Tingling (pruritus). Research recommends that taking turmeric by mouth multiple times every day for about two months decreases tingling in individuals with long haul kidney infection. Additionally, early research recommends that taking a particular blend item (C3 Complex, Sami Labs LTD) containing curcumin in addition to dark pepper or long pepper every day for about a month diminishes tingling seriousness and improves personal satisfaction in individuals with incessant tingling brought about by mustard gas, (Hornebeck, W., and Guenounou, M.*et.al*, 2002) [7].

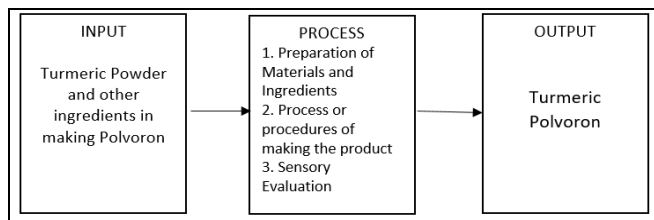
A sort of fiery gut ailment called ulcerative colitis. Some exploration shows that taking curcumin, a concoction found in turmeric, by mouth or as a bowel purge, alongside ordinary medicines, improves indications and expands the quantity of individuals who go into abatement. For individuals as of now in decrease, turmeric improves the probability of remaining going away when utilized in mix with regular medications (Dou, X. *et al.*,2008; Holt, P. R., Katz, S., and Kirshoff, R., 2005) [6, 8].

**Materials and Methods**

A trial explore configuration was utilized right now. The respondents of this examination were 30 evaluators comprising of 5 dads, ten moms, and 15 youngsters.

A 9-point decadent scale was utilized in assessing the tangible adequacy of the examples comprise of various criteria, for example, taste, odor/aroma, color, texture, and general acceptability. The indulgent scale is 8.50-9.00= Like Extremely; 7.50-8.49= Like Very Much; 6.50-7.49= Like Moderately; 5.50-6.49= Like Slightly; 4.50-5.49= Neither Like or Dislike; 3.50-4.49 Dislike Slightly; 2.50-3.49= Dislike Moderately; 1.50-2.49=Dislike Very Much and 1.00-1.49 Dislike Extremely.

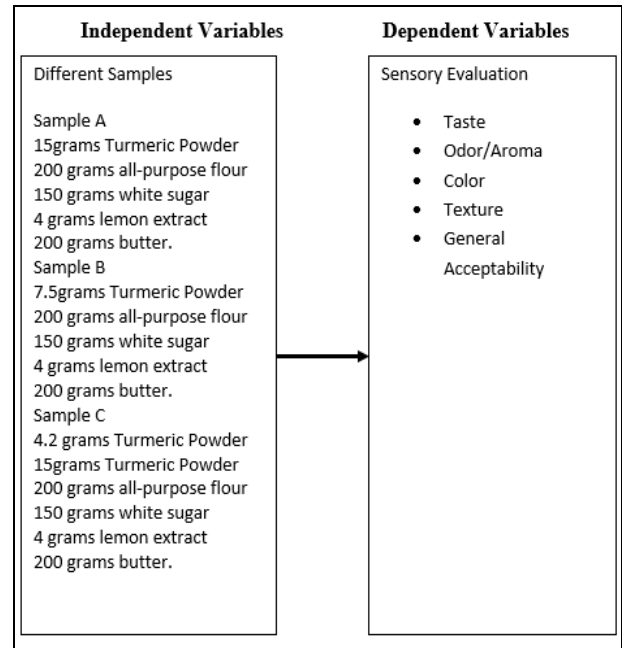
Mean score and standard deviation were utilized in deciding the adequacy of three examples in the various criteria. The three examples are all weight in grams and mixed with same weight of ingredients. Figure 1 shows the Input-Process-Output Model. The Input (I) incorporates the materials and fixings required in making polvoron. The Process (P) incorporates all the step by step methods in doing the product. The Output (O) is the turmeric polvoron.



**Fig 1:** Input (I)-Process (P)-Output (O) Framework

Figure 2 illustrates the research paradigm on sensory acceptability of the three samples. The independent variables consist of the composition of three samples, and the dependent variables consist of the criteria in sensory

acceptability in terms of taste, odor/aroma, color, texture, and general acceptability.



**Fig 2:** Research Paradigm

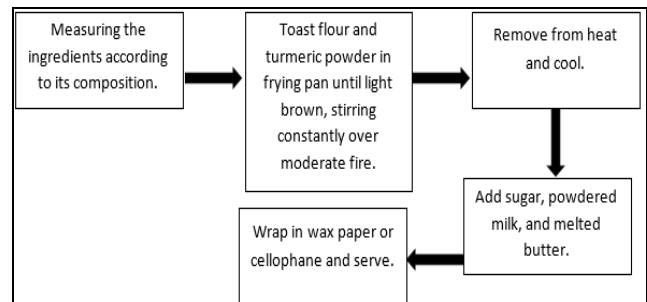
**Materials**

**Ingredients**

- All-purpose flour
- White sugar
- Powdered milk
- Turmeric powder
- Bar butter (melted)

**Procedure**

1. Measuring the ingredients according to its composition.
2. Toast flour and turmeric powder in frying pan until light brown, stirring constantly over moderate fire.
3. Remove from heat and cool.
4. Add sugar, powdered milk, and melted butter.
5. Wrap in wax paper or cellophane and serve.



**Fig 3:** Process Flow Chart

**Results and Discussion**

Table 1 presents the mean scores of Sample A, B, and C in terms of taste, odor/aroma, color, texture and general acceptability.

**Table 1:** Means Scores for the Acceptability of Three Samples in terms of Aroma, Color, Taste Texture, and General Acceptability

Criteria	Sample A	SD	DI	Sample B	SD	DI	Sample C	SD	DI
Taste	4.67	0.60	Neither Like nor Dislike	6.27	1.36	Like Slightly	7.90	0.94	Like Very Much
Odor/aroma	5.10	1.04	Neither Like nor Dislike	6.33	1.22	Like Slightly	8.07	0.81	Like Very Much

Color	5.40	1.25	Neither Like nor Dislike	6.17	1.24	Like Slightly	8.37	0.75	Like Very Much
Texture	5.27	1.53	Neither Like nor Dislike	5.77	1.73	Like Slightly	8.10	0.83	Like Very Much
General Acceptability	5.50	1.26	Like Slightly	6.20	1.35	Like Slightly	8.17	0.86	Like Very Much
Overall Mean	5.19	0.89	Neither Like nor Dislike	6.14	1.09	Like Slightly	8.12	0.70	Like Very Much

**Legend:** 8.50-9.00= Like Extremely; 7.50-8.49= Like Very Much; 6.50-7.49= Like Moderately; 5.50-6.49= Like Slightly; 4.50-5.49= Neither Like or Dislike; 3.50-4.49 Dislike Slightly; 2.50-3.49= Dislike Moderately; 1.50-2.49=Dislike Very Much and 1.00-1.49 Dislike Extremely

It was shown that the most acceptable among three samples of turmeric polvoron is Sample C with an overall mean of 8.12 and standard deviation of 0.70 with a descriptive interpretation of like very much as evaluated by the respondents in terms of; taste ( mean=7.90; sd=0.94), odor/aroma ( mean=8.07; sd=0.81), color (mean= 8.37; sd=0.75), texture (mean=8.10; sd=0.83), and general acceptability (mean=8.17; sd= 0.86). This results revealed that the evaluators like very much Sample C compared to the two samples of turmeric polvoron. Table 2 shows the test of significant difference in different criteria in terms of sensory acceptability composed of taste, odor/aroma, color,

texture, and general acceptability among three samples. The results revealed that there were highly significant differences among three samples in sensory acceptability. In terms of its taste (computed f-value=73.619; p-value=) 0.000, odor/aroma (computed f-value= 59.261; p-value= 0.000), color (computed f-value= 56.099; p-value=0.0000), texture (computed f-value=33.174; p-value =0.000), and for general acceptability (computed f-value=40.083; p-value =0.000) The results revealed that the sensory acceptability of turmeric polvoron among three samples determined that the three sample were significantly different in terms of taste, odor/aroma, color, texture, and general acceptability.

**Table 2:** Test of Significant Difference in Taste, Odor/Aroma, Color, Texture, and General Acceptability Among Three Samples

		Sum of Squares	df	Mean Square	F	Sig.
Taste	Between Groups	156.822	2	78.411	73.169**	.000
	Within Groups	93.233	87	1.072		
	Total	250.056	89			
Odor/ Aroma	Between Groups	133.267	2	66.633	59.621**	.000
	Within Groups	97.233	87	1.118		
	Total	230.500	89			
Color	Between Groups	142.289	2	71.144	56.099**	.000
	Within Groups	110.333	87	1.268		
	Total	252.622	89			
Texture	Between Groups	137.222	2	68.611	33.174**	.000
	Within Groups	179.933	87	2.068		
	Total	317.156	89			
General Acceptability	Between Groups	114.689	2	57.344	40.083**	.000
	Within Groups	124.467	87	1.431		
	Total	239.156	89			

\*p-value $\leq$ 0.05; \*\*p-value $\leq$  0.01

### Conclusion and Recommendations

The results revealed that the most acceptable composition among the three samples is sample C in terms of taste, odor, color, texture, and general acceptability.

Based on the results of this study the researcher concluded that there is highly significant difference among three samples in terms of its sensory evaluation. The researchers recommended that the most acceptable product must be tested its shelf-life and also include the technology readiness of the product. It is also recommended to apply the product and the process for utility model certification before transferring it to the community or for commercialization.

### Acknowledgements

The authors would like to humbly thank the President of Laguna State Polytechnic University, Dr. Mario R. Briones, the Vice President of R & D, Dr. Corazon San Agustin, the Director of R &D, Dr. Editha S. Perey and Associate Dean Consorcia S. Tan of College of Teacher Education for their support for the product of this research study.

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