



**TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY**  
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# **DEVELOPMENT OF TURMERIC-BASED HEALTHY MOCKTAILS**

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## ABSTRACT

This study involves the utilization of turmeric as based ingredient for mocktail. Five formulations were developed using turmeric in combination with other fruits. The fruits could mask the taste of the turmeric. These were either: cranberry for turmeric sangria; lemon for turmelow; banana for turmeric surprise; apple for turmeric fruit shake, and calamansi for turmeric star. Products range from pH 3.93 to 5.84. Three trials were conducted on sensory evaluation. These were evaluated using 7-point hedonic scale for appearance, color, odor, consistency, and flavor and 9-point hedonic scale for general acceptability. Results of sensory evaluation were subjected to statistical treatment using Analysis of Variance (ANOVA). These were further validated by subjecting the samples to preference test. Results showed that all the quality attributes and general acceptability were all non-significant between and among samples in each attribute. However, preference test indicated that the most liked were turmeric surprise (turmeric with banana) and turmeric fruit shake (turmeric with apple). Turmeric star (turmeric with *calamansi*) gave the lowest cost at PhP 28 per serving while the rest of the formulations ranges from PhP 44.00 to PhP 56.00 per serving.

## INTRODUCTION

Beverages are very popular in the Philippines to all walks of life. These are very famous in tropical countries like the Philippines not only in sports but also in other work areas because it could be refreshing. But beverages, aside from serving as drink, can play a significant role in transporting significant nutrients to one's body for easy absorption. This is realized by developing a mocktail (where non-alcoholic drink is mixed with different kinds of fruit juices). As a result, different vitamins and minerals are transported and absorbed to one's body.

Turmeric with a [scientific name](#) , *Curcuma domestica/Curcuma longa* , is a member of ginger family commonly used in Asian food recipes. It contains a yellow-colored chemical called curcumin which is an effective nutritional supplement. It contains crude fiber – 1 %; carbohydrates – 9.6 %; and protein – 2% (FNRI, 2002). It contains Iron, Calcium, Phosphorus, etc.

Turmeric decreases swelling (inflammation). It is used for arthritis, heartburn (dyspepsia), joint pain, stomach pain, Crohn's disease and ulcerative colitis, bypass surgery, hemorrhage, diarrhea, intestinal gas, stomach bloating, loss of appetite, jaundice, liver problems, Helicobacter pylori (H. pylori) infection, stomach ulcers, irritable bowel syndrome (IBS), high cholesterol, a skin condition called lichen planus, skin inflammation from radiation treatment, and fatigue. It is also used for headaches, bronchitis, colds, lung infections, fibromyalgia, leprosy, fever, menstrual problems, itchy skin, recovery after surgery, and cancers. Other uses include depression, Alzheimer's disease, swelling in the middle layer of the eye (anterior

uveitis), diabetes, water retention, worms, an autoimmune disease called systemic lupus erythematosus (SLE), tuberculosis, urinary bladder inflammation, and kidney problems.

Turmeric is a spice that is commonly used in Asian food recipe. It contains a yellow-colored chemical called curcumin, which gives a lot of health benefits, as follows: contains medicinal properties, boosts brain-derived neurotrophic factor, prevent (and perhaps even treat) cancer, prevents Alzheimer's disease, prevents depression, fight age-related chronic diseases, anticoagulants/ antiplatelets, antidepressants, anti-inflammatories/anti-inflammatory capacity, skin condition treatments/ skin care, arthritis management. This spice has potential as a base drink to be combined with other fruits and support ingredient to come up with a highly nutritious drink (Moore, S. 2017; <https://www.healthline.com/nutrition/top-10-evidence-based-health-benefits-of-turmeric>; <https://draxe.com/turmeric-benefits/>; <https://www.organicfacts.net/health-benefits/herbs-and-spices/turmeric.html>).

To further enhance the taste of turmeric as mocktail and to increase the health benefits to be derived from the drink, the following fruits and other major ingredients and respective benefits were considered:

- Cranberry – rich in antioxidants, vitamin C and salicylic acid. It provides energy, protein, and carbohydrates. In terms of minerals, it contains calcium, magnesium, iron, phosphorus, sodium, potassium and zinc. It also contains vitamins like thiamine, riboflavin, niacin, vitamin B-6, vitamin E and vitamin K. Cranberry juice helps prevent urinary tract infection in middle-aged and pregnant women, inhibits the development and spread of lung, breast, colon, prostate, and other cancerous tumors, helps reduce swelling and prevents blood clots. It can help lower the risk of heart-related ailments and assist in sustaining cardiovascular health. It helps to inhibit certain strains of the Haemophilus influenza, which is a common cause of ear and respiratory infections in children. It helps reduce the risk of stomach disorders, including stomach ulcers, prevents scurvy, and treats lung inflammation. The high amount of acid components in cranberry juice prevents kidney stone formation (**15 Amazing Benefits of Cranberry Juice, nd**).
- Honey – contains flavonoids, antioxidants which help reduce the risk of some cancers and heart disease. It is antibacterial and helps treatment of ulcers and bacterial gastroenteritis. It reduces cough and throat irritation, improves eyesight, and treats urinary tract disorders, bronchial asthma, diarrhea and nausea. It helps the body regulate blood sugar levels and strengthens the immune system (**10 Health Benefits of Honey, nd**).

- Pineapple – contains a high amount of vitamins and minerals, and a unique enzyme called bromelain which can help lower inflammation in the body. It contains vitamin C which is associated with a lowered risk of heart disease and helps boost the immune system; manganese, a powerful antioxidant in the body which helps in carbohydrate, protein and cholesterol metabolism and has a role in bone and collagen formation; lots of soluble fibers which aid digestion (<http://www.gyanunlimited.com/health/top-10-amazing-health-benefits-of-pineapple-juice/6086/>; <https://www.caloriesecrets.net/5-amazing-health-benefits-from-eating-pineapple-daily>).
- Grenadine syrup – a mixture of sugar and pomegranate juice which contains antioxidants that protect cells from damage and reduce inflammation, delay the progress of Alzheimer’s disease and protect memory, and improves digestion. It has vitamins C, E, and K, folate, and potassium (<http://www.wisegeek.org/what-is-grenadine.htm>).
- Lemon – rich in vitamin C and contains vitamin B6, vitamin A, vitamin E, folate, niacin, thiamine, riboflavin, pantothenic acid, copper, calcium, iron, magnesium, potassium, zinc, phosphorus and protein. It acts as great weight loss remedy, flushes out toxins, aids digestive system, prevents problems of constipation and diarrhea, and protects the body against immune system deficiencies. It also helps prevent diabetes, high blood pressure, fever, indigestion, and improves the skin, hair and teeth. It can eliminate the occurrence of kidney stones, help reduce pain and inflammation in joints and knees, cure common cold, strengthen the liver and help replenish body salts especially after strenuous workout session (<https://www.popsugar.com/fitness/Lemon-Juice-Good-You-14860617>; <https://www.organicfacts.net/health-benefits/fruit/health-benefits-of-lemon.html>; <http://www.foodmatters.com/article/cheers-to-drinking-warm-lemon-water>).
- Banana – based from a medium- sized (118 g) banana contains a fair amount of fiber (3.1 g), as well as several antioxidants. It contains potassium (9% of RDI) vitamin B6 (33% of the RDI), vitamin C (11% of the RDI), magnesium (8% of the RDI) , copper (10% of the RDI), and manganese (14% of the RDI). Its nutrients can help moderate blood sugar levels after meals, improve digestive health and help protect against colon cancer, may help with weight loss due to its filling effect, may support heart health, may improve kidney health, and may help relieve muscle cramps caused by exercise ([Bjarnadottir, A. 2017](#)).
- Carrot – contains beta-carotene, fiber and a good source of antioxidants. It is rich in vitamins A, C, K and B8, as well as pantothenic acid, folate, potassium, iron, copper

and manganese. It helps lower cholesterol levels and reduces risk of heart attacks, prevents certain cancers, improves vision, boosts the immune system, improves digestion, improves skin, reduces signs of premature aging and detoxifies the body. (10 Impressive Benefits of Carrots, nd)

- Green apple – rich in fiber and antioxidants and contains iron, zinc, copper, manganese, and potassium. It helps protect against Alzheimer’s disease and asthma, helps clean the system and increases metabolism, reduces the risk of colon, liver and breast cancer, decreases the risk of diabetes, helps digestive system, lowers blood cholesterol levels and helps maintain proper blood flow to the heart preventing the chances of strokes. It helps in maintaining healthy and glowing skin (15 Surprising Health Benefits of Apples, nd)
- Milk – a great source of vitamins and nutrients like lactic acid and amino acids. It smoothens and moisturizes skin. Milk is also a great source of calcium which is essential for healthy bones and teeth. It contains protein which helps rebuild muscles. It also helps to de-stress at the end of the day, reduces symptoms of PMS and boosts energy. It lowers high blood pressure and risk of strokes. It contains vitamins A and B that help build good eyesight (Health Benefits of Milk, nd)
- Calamansi – high in ascorbic acid or vitamin C (Ascorbic acid 0.1%) content. It eliminates the toxins and results to faster weight loss. It also increases the body’s resistance to disease, prevents eye disorder, aids in healing of wounds, prevents tooth decay, prevents bleeding of gums and maintains the health of the teeth, improves blood circulation and strengthens the bones (Calamansi Juice Health Benefits, nd)

With the numerous health benefits identified in the base material (turmeric) and other major added ingredients, the mocktail developed could be a preventive measure in encountering health problems. Hence, this study determines the most acceptable fruit combination with turmeric as mocktail. It is assumed that there is no significant difference between and among turmeric smoothies with different fruit samples to mask the turmeric flavor.

## **METHODOLOGY**

### **I. Preliminary Formulation Study**

Preliminary formulation study on different drinks was conducted by the TESDA scholars under Food and Beverage Services as shown in Table 1. Eight formulations were selected among the several products presented by trainees. These were mixtures of turmeric powder with: Lot 1, cranberry juice and pineapple juice; Lot 2, lemon juice; Lot 3, banana and carrot; Lot 4, green apple and fresh milk; Lot 5, was *calamansi* juice. Other mixtures were

tried as shown in lots 6 to 8. The different lots were either shake, built, blended, stirred or muddled.

Table 1. Formulation of turmeric based beverage

Raw Material/ Ingredient/ Method	Lots							
	1 Turmeric Sangria	2 Turmelow	3 Turmeric Surprise	4 Turmeric Fruit Shake	5 Turmeric Star	6 Ever Green	7 Clear eye	8 Losing weight
Turmeric Juice	X	X	x	x	x			
Cranberry Juice	X							
Honey	X	X	x	x		X	X	
Pineapple juice	X							
Vanilla Extract	X		x					
Grenadine syrup	X							
Soda water	X							
Fresh lemon juice		X						
Ginger extract		X						
Banana			x					
Carrots			x				X	
Green apple				x		X		
Fresh milk				x				
Calamansi Juice					x			X
Syrup					x			
Ice cube			x					
Lemon tea							X	X
Papaya							X	X
Water (Boiling)							(X)	X
Pandan						X		
Green tea						X		
Lime						X		
Mint leave						X		
Coco cream								X
Method	Shake and top	Build	Blend	Blend	Stir	Mud- dling	Blend	Blend

## 2. Formulation Study

The first five lots were selected for the succeeding experimental stage because this study concentrated on turmeric as base material. Table 2 shows the ingredients used for each product sample. Turmeric powder with sugar was used in this experiment.

### **3. Product Evaluation**

#### **3.1. Product Characterization on the Most Acceptable Formulation.**

The five mocktails were subjected to pH analysis.

**3.2. Sensory evaluation.** Those 5 product samples were subjected to Sensory Evaluation using 7-point hedonic scales for the evaluation of appearance, color, odor, consistency and flavor and 9-point hedonic scales for general acceptability. Figure 1 shows the Turmeric sangria (mixtures of turmeric powder with cranberry juice and pineapple juice), Turmelow, turmeric with lemon juice (Figure 2), Turmeric surprise, turmeric with banana and carrot (Figure 3), Turmeric fruit shake, turmeric with green apple and fresh milk (Figure 4), and last lot was Turmeric star, turmeric with *calamansi* juice (Figure 5). Samples were evaluated by twenty untrained sensory panels. Three trials were conducted. Results were validated by subjecting the said products to preference test. Annexes A and B show the sensory evaluation forms.

**3.3. Statistical Treatment.** Sensory results were subjected to Statistical Treatment using Analysis of Variance to determine if there were differences between and among samples. Products subjected to preference tests were evaluated using Kramer's Rank Sum Test.

**3.4. Product Costing.** All product samples were subjected to direct material costing per serving.

## **RESULTS AND DISCUSSION**

### **1. Preliminary Formulation**

Preliminary formulation of turmeric based beverage was conducted. Among the 8 formulations, 5 lots were picked up and subjected to full blown product evaluation. These were trimmed down on the use of turmeric as base material.

### **2. Formulation Study**

Based from a round table evaluation, the five product samples considered in the final formulation are shown in Table 2.

Table 2. Final formulations under study

<b>Raw Material/ Ingredient/Method</b>	<b>Lots</b>				
	<b>Turmeric Sangria XXX<sup>a</sup></b>	<b>Turmelow XXX<sup>a</sup></b>	<b>Turmeric Surprise XXX<sup>a</sup></b>	<b>Turmeric Fruit Shake XXX<sup>a</sup></b>	<b>Turmeric Star XXX<sup>a</sup></b>
Ingredients					
Turmeric Juice	/	/	/	/	/
Cranberry Juice	/				
Honey	/	/	/	/	
Pineapple juice	/				
Vanilla Extract	/		/		
Grenadine syrup	/				
Soda water	/				
Fresh lemon juice		/			
Ginger extract		/			
Banana			/		
Carrots			/		
Green apple				/	
Fresh milk				/	
Calamansi Juice					/
Syrup					/
Ice cube			/		
Method	Shake and top	Build	Blend	Blend	Stir

<sup>a</sup>Three trials

### 3. Product Evaluation

**3.1. Product Characterization on the Developed Mocktails.** The five mocktails were characterized for its pH. Table 3 shows the pH of the 5 product samples. The most acidic was the Turmeric star because of the presence of *calamansi* juice. Lemon juice in turmelow contributed to its acidic characteristic. Green apple and cranberry contributed to slight acidic mocktail of turmeric fruit shake and turmeric sangria, respectively. Definitely turmeric surprise did not exhibit acidic flavor because its major ingredients contain banana and carrots.

Table 3. pH of the 5-turmeric based mocktail

	Description	Sample Number	pH Level
1	Turmeric Surprise	627	5.84
2	Turmeric Fruit Shake	406	4.79
3	Turmeric Sangria	118	4.74
4	Turmelow	321	4.23
5	Turmeric Star	505	3.93

**3.2. Sensory Evaluation Results.** Table 4 shows the results of Sensory Evaluation. Ratings were consistent from the products' appearance, color, odor, consistency, flavor and general acceptability. Turmeric fruit shake was the most acceptable sample in terms of general acceptability. This was followed by turmeric sangria and turmeric surprise. However, when subjected to statistical analysis using analysis of variance all samples from three trials were non-significant, meaning all could be introduced in the market depending on the availability of raw material as well as the occasion and/or event. **Figure 6** shows the different mocktails.

Table 4. Result of sensory evaluation on different mocktails

<b>Appearance</b>	<b>Turmeric Sangria</b>	<b>Turmelow</b>	<b>Turmeric Surprise</b>	<b>Turmeric Fruit Shake</b>	<b>Turmeric Star</b>
- Trial 1	6.30	6.25	5.95	6.80	6.00
- Trial 2	5.95	5.80	6.10	5.90	5.80
- Trial 3	6.10	5.55	5.80	6.40	6.20
Total	18.35	17.60	17.85	19.10	18.00
Mean	6.12	5.87	5.95	6.37	6.00
Statistical Results	Non-significant				
<b>Color</b>	<b>Turmeric Sangria</b>	<b>Turmelow</b>	<b>Turmeric Surprise</b>	<b>Turmeric Fruit Shake</b>	<b>Turmeric Star</b>
- Trial 1	6.25	6.20	6.00	6.75	6.10
- Trial 2	6.05	5.60	5.85	6.00	5.85
- Trial 3	6.45	5.20	5.40	6.40	6.00
Total	18.75	17.00	17.25	19.15	17.95
Mean	6.25	5.67	5.75	6.38	5.98
Statistical Results	Non-significant				
<b>Odour</b>	<b>Turmeric Sangria</b>	<b>Turmelow</b>	<b>Turmeric Surprise</b>	<b>Turmeric Fruit Shake</b>	<b>Turmeric Star</b>
- Trial 1	5.80	5.80	6.05	6.75	5.80
- Trial 2	5.15	5.20	6.25	5.55	4.80
- Trial 3	6.80	4.65	5.45	6.75	5.05
Total	17.75	15.65	17.75	19.05	15.65
Mean	5.92	5.22	5.92	6.35	5.22
Statistical Results	Non-significant				
<b>Consistency</b>	<b>Turmeric Sangria</b>	<b>Turmelow</b>	<b>Turmeric Surprise</b>	<b>Turmeric Fruit Shake</b>	<b>Turmeric Star</b>
- Trial 1	5.95	5.95	5.95	6.60	5.80
- Trial 2	5.50	5.15	5.75	5.60	4.45
- Trial 3	6.40	4.75	5.55	6.70	5.80
Total	17.85	15.85	17.25	18.90	16.05
Mean	5.95	5.28	5.75	6.30	5.35
Statistical Results	Non-significant				
<b>Flavor</b>	<b>Turmeric Sangria</b>	<b>Turmelow</b>	<b>Turmeric Surprise</b>	<b>Turmeric Fruit Shake</b>	<b>Turmeric Star</b>
- Trial 1	5.80	5.75	6.25	6.95	5.55
- Trial 2	4.85	4.90	5.40	5.85	3.45
- Trial 3	6.65	4.80	5.45	6.80	5.75
Total	17.30	15.45	17.10	19.60	14.75
Mean	5.77	5.15	5.70	6.53	4.91
Statistical Results	Non-significant				

General Acceptability	Turmeric Sangria	Turmelow	Turmeric Surprise	Turmeric Fruit Shake	Turmeric Star
- Trial 1	5.60	6.00	6.00	6.85	5.80
- Trial 2	5.75	6.20	6.30	6.65	4.40
- Trial 3	8.05	5.45	6.35	8.45	6.90
Total	19.40	17.65	18.65	21.95	17.10
Mean	6.47	5.88	6.22	7.32	5.70
Statistical Results	Non-significant				

**3.3. Validation study through preference test.** Twenty panel mostly preferred a not acidic product as shown in Table 5. Turmeric fruit shake ranked second as most liked because it was not too sour as shown in Table 3. Most evaluators did not like acidic drinks like the turmeric star. Kramer's Rank Sum Test showed that turmeric surprise and turmeric fruit shake were most preferred by the panel and were significantly different from the rest at 5% level of confidence. Turmeric star was the least liked at 1% level of confidence.

Table 5. Result of preference test

Ranking	Description	Total Ranking 5% (45-95) 1% (42-78)	Average
1	Turmeric Surprise	25	1.25
2	Turmeric Fruit Shake	42	2.10
3	Turmeric Star	57	2.85
4	Turmelow	85	4.25
5	Turmeric Sangria	91	4.55

**3.4. Product cost.** When ingredient costing was evaluated, turmeric star could be offered to CD group because it gave the lowest cost per serving followed by Turmeric Sangria as shown in Table 6. Other products like turmelow, fruit shake and turmeric surprise could be offered to AB group and/or on special occasions.

ARIES DO NOT CUT TABLE

**Table 6. Direct material costing**

Materials/ Ingredients			Qty	Unit	Unit Cost	Total Cost
<b>Turmeric Sangria</b>						
15	g	1 T turmeric powder (90 ml Turmeric juice)	350	ml	100.00	4.29
60	mL	Cranberry juice	946	ml	269.50	17.09
15	mL	Honey	350	ml	124.50	5.34
30	mL	Pineapple juice	240	ml	25.00	3.13
5	mL	Vanilla extract	30	ml	25.00	4.17
5	mL	Grenadine syrup	750	ml	175.00	1.17
60	mL	soda water	330	ml	27.00	4.91
26.5	g	pineapple slice	1 (580)	Kg (g)	55.00	2.51
81.4	g	Ice cube	1	kg	25.00	2.04
			<b>total cost per drink</b>			<b>44.65</b>
<b>Turmelow</b>						
15	mL	1 T turmeric powder (90 mL Turmeric juice)	350	mL	100.00	4.29
96.8	g	Fresh lemon juice ( 15 mL)	500	g	188.00	36.40
15	mL	Honey	350	mL	124.50	5.34
18.4	g	Fresh ginger extract( 5 mL)	740	g	33.75	0.84
12	g	lemon wheel	250	g	47.00	2.26
81.4	g	Ice cube	1	kg	25.00	2.04
			<b>total cost per drink</b>			<b>51.17</b>

Materials/ Ingredients			Qty	Unit	Unit Cost	Total Cost	
<b>Turmeric Surprise</b>							
15	mL	1 T turmeric powder (90 ml Turmeric juice)	350	mL	100.00	4.29	
30	mL	Honey	350	mL	124.50	10.67	
4	mL	(2 drops) vanilla extract	30	mL	25.00	3.33	
125.9	g	(1 pc) Banana table ripe lakatan slice	250	kg	19.50	14.23	
106.8	g	Fresh carrots extract 82/205	250	kg	37.50	19.54	
82 82.4	g	Ice cube	1	kg	25.00	2.04	
			<b>total cost per drink</b>			<b>54.10</b>	
<b>Turmeric Fruit Shake</b>							
15	mL	turmeric powder (60 ml Turmeric juice)	350	mL	100.00	4.29	
30	mL	Fresh milk	250	mL	25.75	3.09	
15	mL	honey	350	mL	124.50	5.34	
156	g	1 whole green apple	1	kg	236.00	36.82	
19.5	g	Apple slice	1	kg	236.00	4.60	
81.4	g	Ice cube	1	kg	25.00	2.04	
			<b>total cost per drink</b>			<b>56.16</b>	
<b>Turmeric Star</b>							
15	mL	1 T turmeric powder (90 ml Turmeric juice)	350	mL	100.00	4.29	
60	g	6 pcs fresh calamansi (30 ml Calamansi juice) 380G	1	kg	124.00	19.58	
30	g	white sugar (Simple syrup 1:1)	1/2	kg	27.75	1.67	
0.9	g	star anise	20	g	22.50	1.02	
81.4	g	Ice cube	1	kg	25.00	2.04	
27.				<b>total cost per drink</b>			<b>28.60</b>

## CONCLUSION

All product samples, be it shake, muddled, stirred, blended and build up showed non-significant difference between and among each other in terms of appearance, color, odor, consistency and flavor. There was no significant difference in terms of general acceptability. However, panel ranked turmeric surprise and turmeric fruit shake as most liked and significantly different between and among product samples at 5% level of confidence.

Therefore, any of these beverages could be prepared depending on the available raw material in the area. The preparation of all product samples was simple and its major tool is a blender. The procedure could easily be disseminated as a livelihood project.

## **RECOMMENDATION**

- a. The formulation and procedure should be disseminated as a livelihood project. However, the procedure should be incorporated with Good Manufacturing Practices to be compliant to the law on Food Safety Act 2013 (RA 10611).
- b. Further study should be conducted on improving its formulation. Use of pure turmeric powder should be considered.
- c. Product characterization on total soluble solids and acid brix ratio should be conducted.
- d. The research activity can be part of the learning activity of the trainees in Food and Beverages Services (FBS) to develop their critical thinking and problem-solving skills aligned with the 21<sup>st</sup> century skills.
- e. The research activity can also be used to enhance the learning modules in FBS.
- f. The developed product may be served during special events.
- g. The product could be commercialized but further studies should be taken on how to pre-mix the ingredient to make it readily available.

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**ANNEX A**

**SENSORY EVALUATION FORM ON 7 POINT AND 9 POINT HEDONIC SCALE**



**TURMERIC BASE MOCKTAIL DRINKS**

Name of Panelist (Optional): \_\_\_\_\_

Date: \_\_\_\_\_

Sex: \_\_\_\_\_

Age: \_\_\_\_\_

**Instructions:**

Evaluate the given samples on how much you like or dislike each product. Use the appropriate scale below in choosing your rating which best describes your feeling. Take a drink of water after each product tasted.

Sensory Attribute	Product Sample				
	118	321	627	406	505
Appearance					
Color					
Odor					
Consistency					
Flavor					
General Acceptability					
Rating Scale: (Appearance, Color, Odor, Consistency and Flavor)	Rating for General acceptability				
7- Like very much 6- Like moderately 5- Like slightly 4- Neither like nor dislike 3- Dislike slightly 2- Dislike moderately 1- Dislike	9 - Likely extremely (sagad na sagad ang pagka gusto) 8- Like very much ( gustong gusto) 7 - Like moderately (medyo gusto) 6 - Like slightly (konting gusto) 5- neither like or dislike (hindi gusto at hindi ayaw) 4- dislike slightly (konting ayaw) 3- dislike moderately (medyo ayaw) 2- dislike very much (ayaw na ayaw) 1- dislike extremely (sobrang pagka ayaw)				

Comments:

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**ANNEX B**  
**SENSORY EVALUATION FORM ON PREFERENCE TEST**



**TURMERIC BASE MOCKTAIL DRINKS**  
**PREFERENCE TEST**

Name of Panelist (Optional): \_\_\_\_\_ Date: \_\_\_\_\_

Sex: \_\_\_\_\_ Age: \_\_\_\_\_

Instructions:

Please evaluate the following turmeric mocktail using the appropriate scale to rate your preference on the mocktails as 1 most liked to 5 least liked or as most dislike.

<b>118</b>	<b>321</b>	<b>627</b>	<b>406</b>	<b>505</b>

Comments: \_\_\_\_\_  
\_\_\_\_\_

# ANNEX C PRODUCT SAMPLES

Figure 1. Turmeric based mocktails

ARIES PLEASE PICK UP THE BEST IF YOU WILL PICK UP THE FIRST CROP THE SIDES PLEASE





**Insert in every discussion**



# **TURMERIC SANGRIA**



**TURME**

**LOW**



**TURMERIC  
SURPRISE**



**TURMERIC  
FRUIT SHAKE**



# **TURMERIC STAR**