

BIBLIOGRAPHY

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ABSTRACT

This study was conducted to determine acceptability of Sun dried and Smoked etag, and find out how consumer evaluate out from the two methods of making etag as to appearance, color, texture, aroma, taste and general acceptability.

Sensory evaluation was conducted to determine the acceptability of the two methods of making etag. There were 80 panelists that include 25 students, 21 households, 14 faculty and 20 staff of the school. The two kinds of Etag (sun dried and smoked) were prepared and a taste test was conducted with 80 panelists. The panelist evaluated the two kinds of etag according to appearance, color, texture, taste and aroma.

Findings showed that smoked etag is like very much and most accepted by the consumer. Based on the result of the product testing, and statistical analysis smoked etag was the most accepted.

However further study must be conducted to improve the product based on comments of panelist. Further more, a market acceptability test must be done to determine the potential of the product for commercialization.

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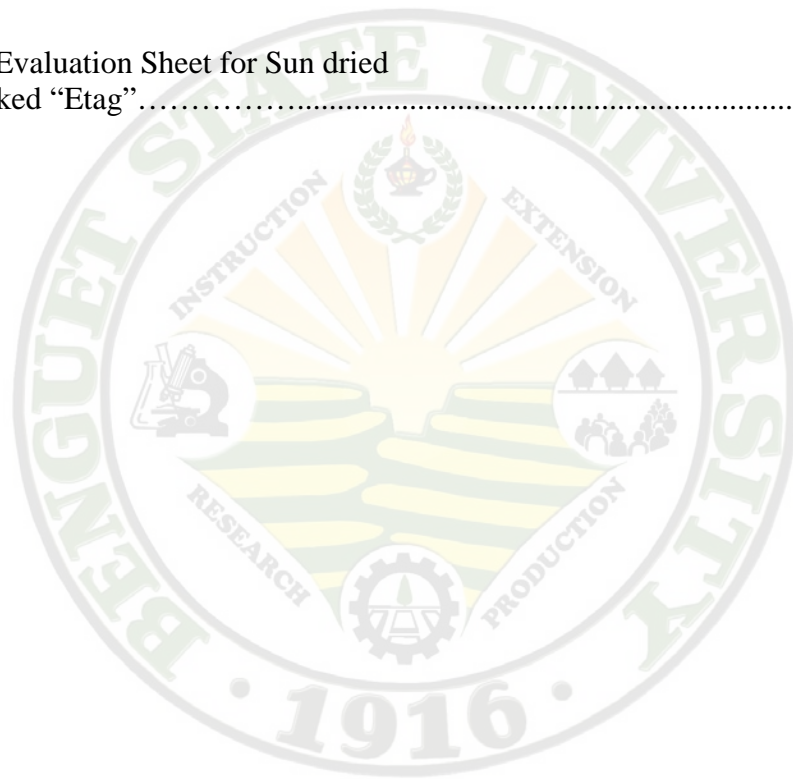
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INTRODUCTION

Rationale of the Study

In the Cordillera, people have various ways of preserving and processing meat, where salting, drying, and smoking is the most common methods. In Mountain Province, particularly the Western part, the dried salted meat called “Etag” to them is an important ingredient to their native delicacy, called “pinikpikan” .It is usually prepared during occasions like wedding, celebration of natal day, “kanyaws”, harvesting time and other occasions.

“Etag” is Sagada's version of smoked ham. Pork is salted and Smoked in the cooking area (if you’re using firewood to cook) and left in the area for further smoking it is only taken when needed. Some people store *Etag* in earthenware and age it there. It usually sells at P20 higher than fresh pork (e.g. - if pork sells for P130/kilo, *Etag* sells for P150/kilo). Quality and taste of etag differs among processors.

According to Bulalat (2004), Etag is the Mountain Province variant “innasin”, for which the Igorots of the Cordillera highlands are famous. Dubbed by foreigners as “Igorots ham”, it is made by smoking that is done repeatedly for at least 30 minutes or maximum of three hours a day for at least two weeks. The meat is stored, usually in clays jars. The term innasin is derived from the Bontoc/Igorot term “inassinan” meaning salted. This is used to describe salted pork meat. This is actually smoked ham, but more salty, and in many ways, better. Some Igorots call this “Etag”, but according to *Ayotsok*, the Etag could also apply to Beef, Carabao, and Wild Boar meat.



The first type of processed product was sun dried meat, salting and smoking were also ancient practices. These early processed product were prepared for one purpose for food preservation for future used (PCARRD, 1991).

Salting as a way of preservation is used extensively in our country for fish and meat. When salt is applied, water content is drawn out by osmosis, most bacteria stop growing in salt concentration of about 1.5 percent. In a saturated salt solution at a given temperature such as 26.5 salt percent at 21.1 Degrees Celsius, bacteria, molds and yeast are unable to grow. It is expected that there is no free water available for microbial growth at this salt concentration.

Meat is considered an important part of a well balance diet. It has been used as food even before historians started to record events. Prehistoric men were hunters. They catch animals and eat the meat, however, they cannot consume all the meat; therefore, they resorted to various procedures to prevent the spoilage of the meat, they started the meat preservation (Groiler, 2002).

“Etag” is now gaining its popularity that even people from other places start to love it. However, the production of a good Etag depends on some factors. One of this is the drying method. It is then the aim of this study to find out which drying method will yield the best “etag.” It is hoped that the result of this study will provide ideas to researchers, nutritionists, home technologists and those interested in acquiring practiced knowledge about meat preservation.



Statement of the Problem

The study aimed to answer the following questions:

1. What is the profile of the respondents?
2. How do consumers evaluate sun dried and smoked “Etag” in terms of:
 - a. appearance
 - b. color
 - c. texture
 - d. aroma
3. How do consumers evaluate the taste of sun dried and smoked “Etag” as to saltines.

Objective of the Study

The study aimed to:

1. Find out the profile of the respondents.
2. Find out how do consumers evaluate sun dried and smoked “Etag” in terms of :
 - a. appearance
 - b. color
 - c. texture
 - d. aroma
3. Find out how consumers evaluate the taste of sun dried and smoked “Etag” as to saltines.

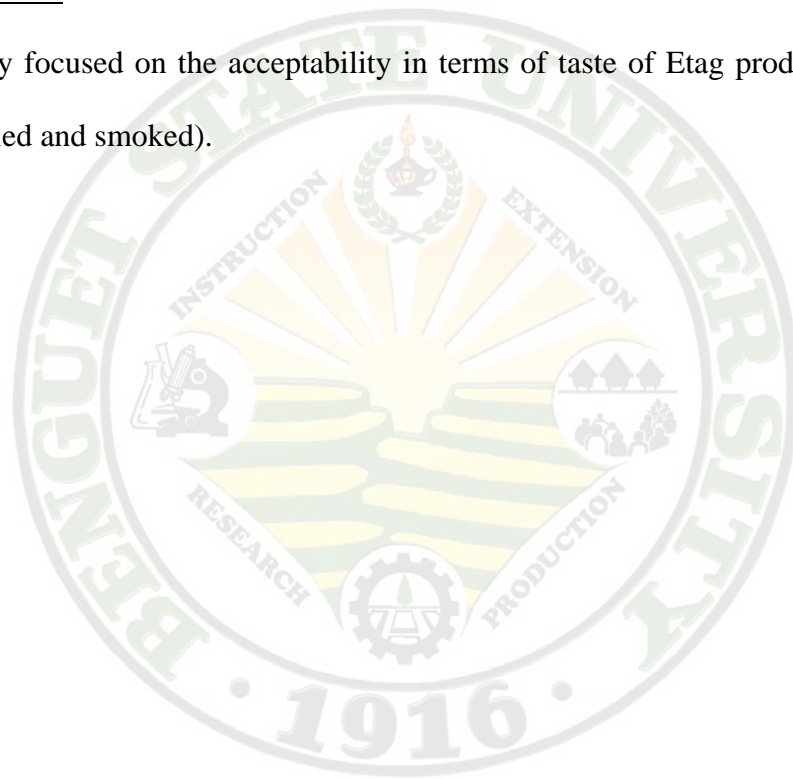


Importance of the Study

In the development of a product, one factor to consider is the taste and preferences and acceptability of consumers to the product. This is very important to find out the acceptability of the target market. The result of this study will provide basic information for decision making of entrepreneurs or potential entrepreneurs planning to engage in Ettag processing.

Scope and Limitation

The study focused on the acceptability in terms of taste of Ettag produced from two methods (sun dried and smoked).



REVIEW OF LITERATURE

Acceptability of Meat

According to Ibarra (1983) as cited by Guiledan (2005), mentioned three reasons why men eat meat. First, it provides satiety unequalled to other food items. An individual who eats a meal with a meat dish feels satisfied for a long period. Secondly, meat can also be prepared in many ways that is why it can never be monotonous to the taste of the consumer. Thirdly, meat provides nutrients almost in proportion and amount needed by the human body, especially in terms of proteins. He cited however that meat is highly perishable. Without proper handling when exposed to the surrounding spoilage will readily occur. Preservation has been the only tool to prevent these deteriorative changes and the development of the effective measures of preservation continuous to be done by the major fields and industrial endeavor.

Moreover, he cited that salting and drying are the oldest method meat preservation. It is accomplished in several ways. The cheapest method is by sun drying. Meat is sliced into strips then hanged under the sun until the moisture is brought down to about 14%. Salting, on the other hand, is done by adding sodium chloride (NaCl), hypo chloride of calcium, sodium sulfates, etc.

Preservation of Meat

Meat preservation originated in pre-historic times. The first method of meat preservation was the sun drying. Salting and smoking of the meat were also ancient practices. These early methods of meat preservation were done for one purpose, to prolong the shelf life of the meat. The physical appearance, the chemical composition and consistency of the



product may change but as long as its fitness for human consumption is lengthened, preservation is achieved. Without the use of appropriate counter measures, these changes will quickly make meat unfit for consumption.

Salted-cured meat or salted meat, for example ham, bacon or kippered herring, is meat or fish preserved or cured salt or brine. Salt beef was a staple of the diet in North Africa, Southern China and in Arctic where they are associated with nasopharyngeal cancer caused by infection by the Epstein - Barr virus. One study hypothesize that a convector is anaerobic bacteria found in salted fish. Salt is inhibits the growth of microorganism by drawing water out of microbial cells through osmosis. Concentrations of salt up to 20% are acquired to kill most species of unwanted bacteria. Smoking, often used in process of curing meat, adds chemicals to the surface of meat that reduce the concentration of salt acquired. "Salt Beef" in the UK and Commonwealth as a cured and boiled food stuff is also known as "Corned Beef" elsewhere. The used of the term corned comes from the fact that the Middle English word corn could refer to the grains of salt as well as a cereal grain (Wikipedia,2007).

According to Didican as cited by Guiledan (2005), pork prepared by salting, sun drying, and smoking are better and acceptable process for "Etag" preparation. It is also best to preservation meat butchered during any occasions except meat coming from funeral ceremonies or death rituals because it is easily spoiled and with undesirable odor.

Salt has been known to improve the palatability and acceptability of food. Addition of salt is known to improve the flavor and acceptability of many types of foods particularly meat, poultry products, fish, vegetables and other fruits.



To improve sundried meat and fish, these may be pre-treated by dipping in a salt solution at the rate of 30-40%. This level is sufficient to prevent the growth of *Clostridium botulinum* and *staphylococcus*.

Sensory Evaluation

Sensory evaluation is a method of analyzing any product using the five senses. It is used for all types of product and may be as the Pepsi/Coke difference test or a more complex evaluation. The official study of sensory evaluation as related to food products is a fairly new idea, although it is unofficially practiced every day by the people throughout the world (Anonymous).

Sensory evaluation is the science of judging and evaluating the quality of a food by the use of the senses, i.e. taste, smell, sight, touch and hearing. Sensory testing has been developed into a precise, formal, structured methodology that is continually being update to refine existing techniques. The developed methods serve economic interests and can be establish the worth or acceptance of a commodity. Sensory tests offer a course to select the product that optimizes value for money. Sensory evaluation is used for practical application in product development by aiding in product matching, improvements, and grading. Research is another area where sensory evaluation is frequently used. Evaluation of a product may be needed to determine the affects an experiment had on its subject. Finally, quality control and marketing is yet another application of sensory testing (Meilgaard, 1991).



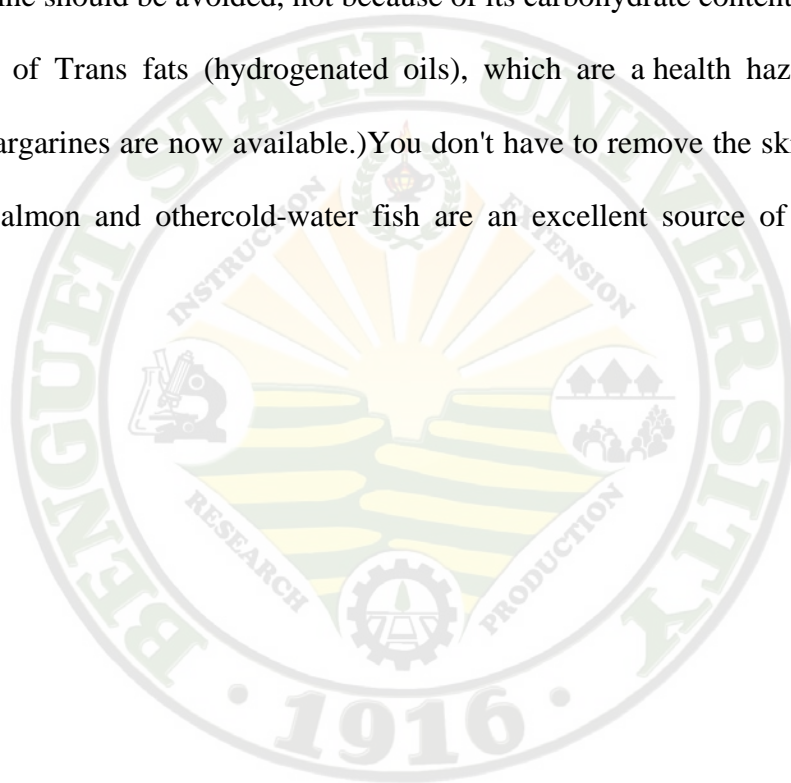
The Hedonic Scale

The Hedonic scale is anchored verbally with nine different categories ranging from like extremely to dislike extremely. These phrases are placed on a line-graphic scale either horizontally or vertically. Many different forms of the scale may be used with success, however variations in the scale form is likely to cause marked changes in the distribution of responses and ultimately in statistical parameters such as means and variances (ASTM, 1968). Hedonic ratings are converted to scores and treated by rank analysis or analysis of variance. As mentioned earlier, hedonic scales are used with both experts and untrained consumers, with the best results obtained with an untrained panel (Amerine, et al., 1965). The ratings labels obtained on an hedonic scale may be affected by many factors other than the quality of the test samples. Characteristics of the subjects, the test situation, attitudes or expectations of the subjects can all have a profound affect on results. A researcher needs to be cautious about making inferences on the bases of comparison of average ratings obtained in different experiments (ATSM, 1968). Many other tests, besides hedonic scales are used in the sensory evaluation of a food product. Determining the type of research that is being done, and the type of evaluation that is needed is crucial in obtaining accurate results from a sensory project. In Hedonic testing, samples are presented in succession and the subject is told to decide how much he likes or dislikes the product and to mark the scales accordingly. The nature of this test is its relative simplicity. The instructions to the panelist are restricted to procedures, and no attempt is made at direct response. The subject is allowed, however to make his own inferences about the meaning of the scale categories and determine for himself how he will apply them to the samples. A separate scale is provided for each sample in a test session. The scales may be grouped together on a page, or be on separate pages.



Acceptable Fats and Oil

Many fats, especially certain oils, are essential to good nutrition. Olive oil is particularly valuable. All other vegetable oils are allowed, the best being canola, walnut, soybean, grape seed, sesame, sunflower and safflower oils, especially if they are labeled "cold-pressed" or "expeller-pressed." Do not cook polyunsaturated oils, such as corn, soybean and sunflower oil, at high temperatures or allow to brown or smoke. Butter is allowed. Margarine should be avoided, not because of its carbohydrate content, but because it is usually made of Trans fats (hydrogenated oils), which are a health hazard. (Some non hydrogenated margarines are now available.) You don't have to remove the skin and fat from meat or fowl. Salmon and other cold-water fish are an excellent source of omega-3 fatty acids.



METHODOLOGY

Locale and Time of the Study

The sensory evaluation was conducted last February 6, 2008 at Agribusiness Building, Benguet State University and different households of La Trinidad, Benguet.



Figure 1. Map of La Trinidad

Respondents/Product Evaluators

Product evaluators were the source of data. There were 80 panelists that include 25 students, 21 households, 14 faculty and 20 staff of the school.

Data Collection

Simple sensory evaluation was conducted to determine the acceptability of consumers on taste, appearance, color, texture and aroma of sun dried and smoked Etag. An evaluation sheet was provided to the panelist.



Data Gathering Procedure

The two kinds of Etag (sun dried and smoked) were and a taste test was conducted with 80 panelists.

Data Analysis

Data were tabulated, analyzed and presented using simple statistical tools such as frequency count, percentage, ranking and appropriate statistical tools.



RESULTS AND DISCUSSION

Etag Processing

The used meat was a backyard pig; the fatty parts of the pig are the best part used in making etag. To many Igorots, they refers to use the meat on top of the neck of the pig. In this study including the liberal amount taken from the part below the stomach. The age of the pork used was 8 months old.

Step by step procedure:

1. Wash the meat
2. Removed the bones to avoid spoilage.
3. Rub the meat with generous amount of salt.
4. For more spicy taste do the same procedure by adding ground garlic and ground black pepper.
5. After mixing all ingredients store the meat for at least one week. Use clay earthen jars for a better result.
6. After storing the meat for one week, the meat was divided into two, the first half was wrap with a news paper and dry it under the sun every day. And the other halves were hanged under the fire, It should be high enough so that smoke reaches the meat. Do it for a minimum of 30 minutes and a maximum of three hours every day.
7. Drying and smoking of the salted meat was done for almost one month.



Profile of Panelist

The targets of this product development endeavor are students, households faculties and staff of Benguet State University. The product evaluators/panelist were from different tribes of the Cordillera and low land areas, 41.25% were Kankana-ey, 28.75% were Ilocano, 5% were Tagalog, and 1.25% were from Pangasinan, Aklan, Ifugao and Kalinga. There were 42 female panelist and 38 males.

Table 1. Profile of panelist

PARTICULARS	FREQUENCY	PERCENTAGE
Tribe		
a. Kankana-ey	33	41.75
b. Ilocano	23	28.75
c. Ibaloi	16	20
d. Tagalog	14	5
e. Pangasinense	1	1.25
f. Aklanon	1	1.25
g. Ifugao	1	1.25
h. Kalinga	1	1.25
TOTAL	80	100
Sex		
a. Male	38	47.5
b. Female	42	52.5
TOTAL	80	100



Consumer Product Testing

Panelist evaluated the sundried and smoked etag according to appearance, color, texture, aroma, taste and general acceptability.

Consumer's acceptability of sundried and smoked etag as to appearance. Most (67.5%) of the panelist/evaluators like the appearance and 10% liked it very much, while 20% disliked and 2.5% disliked very much. For smoked etag one half of the panelist (50%) liked very much the appearance, 43.75% liked, 5% disliked and 1.25% disliked very much. In terms of appearance, the smoked etag is more acceptable by the panelist as compared to the sundried etag. Statistical analysis shows that the consumer acceptability to appearance of smoked etag is highly significant, Which is obvious in the result that a more number of panelist preferred the smoked etag

Table 2. Acceptability of the two kinds of etag as to appearance

ACCEPTABILITY	SUNDRIED ETAG		SMOKED ETAG	
	F	%	F	%
1. Dislike very much	2	2.5	1	1.25
2. Dislike	16	20	4	5
3. Like	54	67.5	35	43.7
4. Like very much	8	10	40	50
TOTAL	80	100	80	100

F = 32.78 ** highly significant

Consumer's acceptability of sundried and smoked etag as to color. Most (71.25%) of the panelist/evaluators liked the color and 8.75% liked it very much, 20% disliked the



color of the sundried etag. One half (50%) of the panelist/evaluators liked very much the color of the smoked etag, 46.25% liked and only 3.75% disliked. In terms of color result implies that smoked etag is more acceptable by the panelist as compared to the sundried etag. Statistical analysis shows that the consumer acceptability as to color smoked etag is highly significant. The result implies that smoked is more preferred than sundried etag.

Table 3. Acceptability of the two kinds of etag as to color

ACCEPTABILITY	SUNDRIED ETAG		SMOKED ETAG	
	F	%	F	%
1. Dislike very much	-	-	-	-
2. Dislike	16	20	3	3.75
3. Like	57	71.25	37	46.25
4. Like very much	7	8.75	40	50
TOTAL	80	100	80	100

F = 43.65 ** highly significant

Consumer's acceptability of sundried and smoked etag as to texture. Most (68.75%) of the panelist/evaluators liked the texture and 20% liked very much, while 10% disliked and 1.25% disliked very much. While more than half 55% of the panelist/evaluators of liked very much and 40% liked the texture of the smoked etag. In terms of texture result implies that smoked etag is more acceptable by the panelist as compared to the sundried etag. Statistical analysis shows that the consumer acceptability as to texture of sundried and smoked etag is highly significant. This implies that smoked etag is highly acceptable or more preferred than sundried etag.



Table 4. Acceptability of the two kinds of etag as to texture

ACCEPTABILITY	SUNDRIED ETAG		SMOKED ETAG	
	F	%	F	%
1. Dislike very much	1	1.25	-	-
2. Dislike	8	10	4	5
3. Like	55	68.75	32	40
4. Like very much	16	20	44	55
TOTAL	80	100	80	100

F = 20.25 ** highly significant

Consumer's acceptability of sundried and smoked etag as to aroma. More than half (58.75%) of the panelist/evaluators liked the aroma of sundried etag and only 20% liked very much, while 10% disliked and 1.25% disliked very much, on the other hand more than half (58.75%) of the panelist/evaluators liked the aroma of smoked etag, 40% liked the appearance, and only 5% disliked. In terms of aroma, result implies that the smoked etag is more acceptable by the panelist as compared to the sundried etag. . Statistical analysis shows That the consumer acceptability as to aroma of sundried and smoked etag is highly significant. Result implies that smoked etag is more accepted in terms of aroma.



Table 4. Acceptability of the two kinds of etag as to aroma

ACCEPTABILITY	SUNDRIED ETAG		SMOKED ETAG	
	F	%	F	%
1. Dislike very much	4	5	-	-
2. Dislike	13	16.25	3	3.75
3. Like	47	58.75	30	37.5
4. Like very much	16	20	47	58.75
TOTAL	80	100	80	100

F = 33.64 ** highly significant

Consumer's acceptability of sundried and smoked etag as to taste. Most (66.25%) of the panelist/evaluators like the taste, 21.25% liked very much, while 10% disliked and 2.5% disliked very much the taste of sundried etag. Most (66.75%) of the panelist/evaluators of smoked etag liked very much the aroma, 32.5% liked and only 1.25% dislike. Result implies that the smoked etag is more acceptable by the panelist as compared to the sundried etag. Statistical analysis shows that the difference on consumer acceptability as to taste of sundried and smoked etag is highly significant.



Table 6. Acceptability of the two kinds of etag as to taste

ACCEPTABILITY	SUNDRIED ETAG		SMOKED ETAG	
	F	%	F	%
1. Dislike very much	2	2.5	-	-
2. Dislike	8	10	1	1.25
3. Like	53	66.25	26	32.25
4. Like very much	17	21.25	53	66.25
TOTAL	80	100	80	100

F = 41.25 ** highly significant

Consumer's general acceptability of the sundried and smoked etag. As to general acceptability most (70%) of the panelist/evaluators liked the sundried and 21.25% liked very much, while 7.5% disliked and 1.25% disliked very much. On the other hand most (68.75%) liked very much the smoked etag and 31.25% liked. Result implies that the smoked etag is more acceptable by the panelist as compared to the sundried etag. Statistical analysis shows that the difference in general acceptability of sundried an smoked etag is highly significant.

Table 7. Acceptability of the two kinds of Etag as to General Acceptability

ACCEPTABILITY	SUNDRIED ETAG		SMOKED ETAG	
	F	%	F	%
1. Dislike very much	1	1.25	-	-
2. Dislike	6	7.5	-	-
3. Like	56	70	25	31.25
4. Like very much	17	21.25	55	68.75
TOTAL	80	100	80	100

F = 48.40 ** highly significant



Based on the acceptability of the panelist (students, households, faculties and staff), majority liked the smoked etag. The panelists represent the type of target market. It is assumed that Smoked Etag is highly acceptable by the consumer.

Panelist and Consumers Comments on Sundried Etag and Smoked Etag

Panelist/evaluators of sundried etag and smoked etag gave their suggestions to improve the product, some have positive comments and some have negative comments. This will serve a basis in the improvement of the product to suit the taste and preferences of consumer. Comments and suggestions were solicited from the panelist. Comments and suggestions on the two kinds of etag present in Table 8.

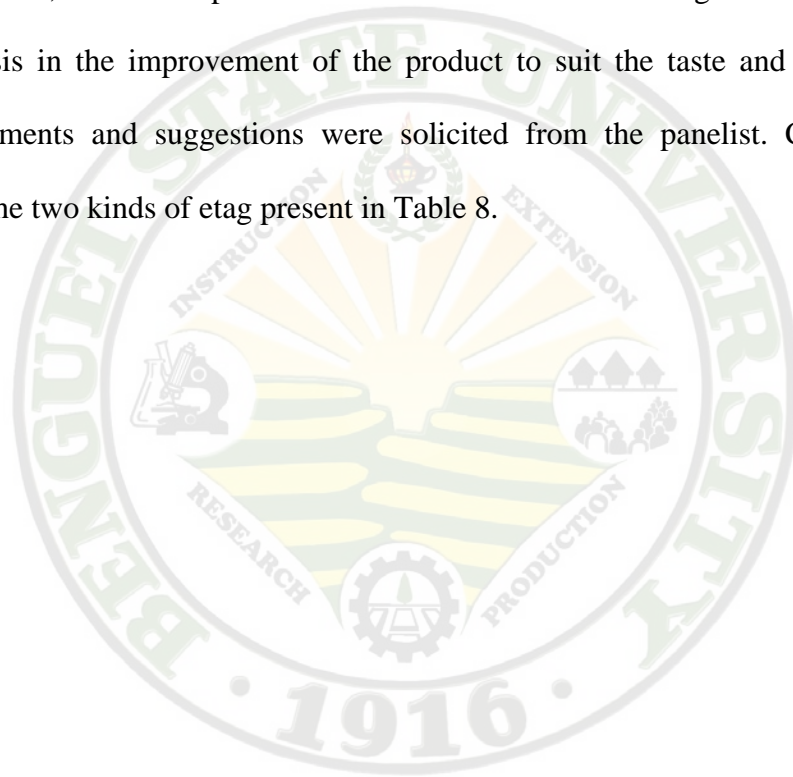


Table 8. Comments/suggestion of sundried and smoked etag

COMMENTS/SUGGESTIONS	SUNDRIED ETAG		SMOKED ETAG	
	F	%	F	%
Excellent	3	3.75	13	16.25
Good	7	8.75	4	5
Aroma and taste good	1	1.25	-	-
Appearance and color good	-	-	3	3.75
Aroma and taste excellent	-	-	2	2.5
Increase the price	1	1.25	5	6.25
Taste is very good	1	1.25	2	2.5
Good aroma	-	-	3	3.75
Very pleasing appearance	-	-	1	1.25
Good taste	2	2.5	-	-
Increase the price	3	3.75	7	8.75
Improve packaging	6	7.5	9	11.25
Soft	1	1.25	-	-
Salty	2	2.5	1	1.25
Too fat	4	5	2	2.5
Hard to chew	-	-	1	1.25
Taste is not good	2	2.25	-	-
Not appetizing in appearance	1	1.25	-	-

Price Acceptability

Considering the existing market price of smoked etag in the market which is 40.00 pesos for a 200g/ pack, majority (93.75%) of the panelist mentioned that price is affordable, while only 6.25% mentioned that price is not affordable.



SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

This study was conducted to find out and compare the acceptability of etag process in two different methods; sundried and smoked. The panelist evaluated the etag as to appearance, color, texture, aroma, taste price, general acceptability and the packaging material used.

There were eighty panelist/respondents in the product evaluation, Panelist includes; students, household, faculties and staff of Benguet State University where the product taste evaluation was conducted.

Results showed that majority of the respondents like the smoked etag compared to sundried etag in terms of appearance, color, texture, aroma, taste and general acceptability. More than half (68.75%) of the panelist like extremely the smoked etag, and 31.25% like the product. Statistical analysis showed, the acceptability of smoked etag is highly significant.

Positive and negative comments were also gathered from the panelist, some mentioned about the color and suggested to age the etag for a longer period, Suggestions for the improvement of the product were also solicited from the panelist they suggest to improve the packaging so that it will be eye-catching to consumer and also they suggested to increase the price.

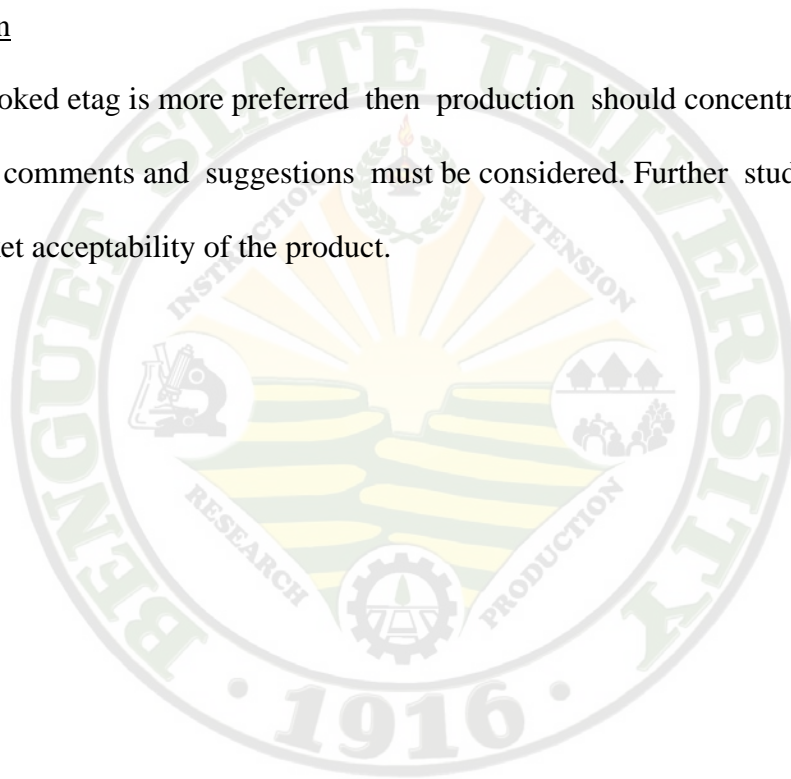


Conclusions

1. Smoked etag is preferred than sundried as to appearance, color, texture, aroma, taste and general acceptability.
2. Smoked etag is most accepted by the consumers as shown in the result in the product testing.
3. Cordilleran's and Lowlanders are potential consumers of etag.

Recommendation

Since smoked etag is more preferred then production should concentrate on smoked etag. However, comments and suggestions must be considered. Further study must also be done in the market acceptability of the product.



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Appendix A

Appendix Table 1. Appearance

<u>Analysis of Variance</u>						
Source	SS	df	MS	F		Prob > F
Between groups	13.225	1	13.225	32.78	**	0.0000
Within groups	63.75	1.58	.403481013			
Total	76.975	159	.484119497			

Appendix Table 2. Color

<u>Analysis of Variance</u>						
Source	SS	df	MS	F		Prob > F
Between groups	13.225	1	13.225	43.65	**	0.0000
Within groups	47.875	158	.303006329			
Total	61.1	159	.38427673			

Appendix Table 3. Texture

<u>Analysis of Variance</u>						
Source	SS	df	MS	F		Prob > F
Between groups	7.225	1	7.225	20.55	**	0.0000
Within groups	55.55	1.58	.351582278			
Total	62.775	159	.394811321			



Appendix Table 4. Aroma

<u>Analysis of Variance</u>					
Source	SS	df	MS	F	Prob > F
Between groups	15.00625	1	15.00625	33.64 **	0.0000
Within groups	70.4875	158	.446123418		
Total	85.49375	159	.537696541		

Appendix Table 5. Taste

<u>Analysis of Variance</u>					
Source	SS	df	MS	F	Prob > F
Between groups	13.80625	1	13.80625	41.25 **	0.0000
Within groups	52.8875	158	.334731013		
Total	66.69375	159	.419457547		

Appendix table 6. General acceptability

<u>Analysis of Variance</u>					
Source	SS	df	MS	F	Prob > F
Between groups	13.225	1	13.225	48.40 **	0.0000
Within groups	43.175	158	.273259494		
Total	56.4	159	.354716981		



Appendix B

SENSORY EVALUATION SHEET FOR SUN DRIED AND SMOKED “ETAG”

Dear judges/ evaluators,

You are kindly asked to compare the two kinds of “etag.” The comparison focuses on the appearance, color, texture, aroma, taste. And over-all acceptability of the said product (check for one each sample).

ALLYSON D. BOLINAO
Student Researcher

Name of judge/ evaluator (optional) _____

Sex: _____ Tribe: _____ Age: _____

EVALUATION RATING FOR SUN DRIED “ETAG”

CRITERIA	RATING			
	Dislike very much (1)	Dislike (2)	Like (3)	Like very much (4)
Appearance				
Color				
Texture				
Aroma				
Taste				
General acceptability				

PRICE: P40 Afford _____ Not-Afford _____

Comments/suggestions; _____

_____.



EVALUATION RATING FOR SMOKED “ETAG”

CRITERIA	RATING			
	Dislike very much (1)	Dislike (2)	Like (3)	Like very much (4)
Appearance				
Color				
Texture				
Aroma				
Taste				
General acceptability				

PRICE: P40 Afford _____ Not-Afford _____

Comments/suggestions; _____

Thank you very much, >” <., 7_

