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Research Article

Acceptability and Marketability of Sunsejack Peanut Brittle

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ABSTRACT

This study aims to know the acceptability and marketability of using sunflower seeds, sesame seeds, and jackfruit seeds when creating a variant of the food brittle. The peanut brittle was created containing different ratios of sunflower, sesame, and jackfruit seeds to know the acceptability of the different ratios in terms of appearance, aroma, color, taste, and texture. The same system was also used to know about the marketability of the created version of peanut brittle in terms of supply availability, product cost, and consumer demand. The gathered data showed varied results from different samples on the different ratios and their criteria. The data gathered in this research were from MAT-Food Technology students who were officially enrolled at Marikina Polytechnic College during the semester, academic year 2022-2023. There were 30 teenagers, 30 adults and 30 young adults that comprised the group of evaluators, by using the 9-Point Hedonic Rating Scale. On the other hand, 30 TLE Teacher, 30 Food Brittle Maker and 30 Seller represented the other group of evaluators, by using the 5-Point Likert Scale. Their evaluations were then compared to know if there are significant differences between the evaluations of different samples on the three ratios and showed varied results across the three ratios in terms of acceptability and marketability. Lab tests were also conducted to analyze the physicochemical properties of the created SUNSEJACK peanut brittle which showed that they contain carbohydrates, protein, a moisture content of 3.7107%, and a pH of 7.1.

Keywords: *Acceptability and marketability, Jackfruit seeds, Sesame seeds, Sunflower seeds*

Introduction

Sunflower seeds are the fruits of a sunflower plant. There are three types of sunflower seeds that are often used, these three are linoleic, high oleic, and NuSun developed for sunflower oil. Each type has its own unique levels of polyunsaturated, saturated, and monounsaturated fats. The information in this study mainly focuses on the linoleic variety.

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Sunflower seeds contain a reasonable amount of protein which makes them a great source of plant protein. They are also one of the best whole food sources of Vitamin E. Vitamin E is an integral part of our diet. Being an anti-oxidant, it helps in preventing heart diseases by getting rid of the harmful free radicals that can lead to atherosclerosis.

Sesame seeds have one of the highest oil contents when compared to other kinds of seeds. It is also a common ingredient in food across the world due to its rich and nutty flavor. They are often sold with their husks removed. This type can often be seen present on top of baked goods in many parts of the world. Sesame seeds have a variety of color and composition, content of fat and proteins.

The largest edible fruit is the jackfruit, which is a member of the Moraceae family. Several fruits with a green to yellow-brown rind are produced by jackfruit. Carpal apices that are hexagonal and conical make up the rind. Essential elements like fiber, lipids, carbs, protein, vitamins, and minerals are all present in jackfruits (Elevitch et al., 2006).

Jackfruit trees are naturally found in Southeast Asia and well-known in many tropical and sub-tropical countries. It can be found in five states in Malaysia namely Terengganu, Kedah, Perak, Johor, and Pahang make up about 77% of the production of jackfruits. They are also one of the most important products of Malaysia due to it having many uses in industry and food applications.

Jackfruit seeds have antimicrobial compounds inside them that can help in preventing contamination that can cause food borne diseases. The seeds of jackfruit were also traditionally used to cure digestive problems. However, more research is needed to verify these potential benefits.

Statement of the Problem

This study was conducted to determine the acceptability and marketability of SUNSEJACK Peanut Brittle during the academic year 2022-2023 at the Marikina Polytechnic College. It specifically sought answers to the following questions.

1. What is the level of acceptability of the "SUNSEJACK" Brittle with 25-, 50-, and 75-grams ratio based on the following:
   a) Appearance
   b) Aroma
   c) Color
   d) Taste
   e) Texture
2. Are there significant differences among the evaluation of the three groups of respondents on the acceptability level of SUNSEJACK Peanut Brittle as regards the above-mentioned criteria?
3. What is the result of physicochemical analysis of SUNSEJACK Peanut Brittle based on the following tests:
   a) Carbohydrates
   b) Moisture Content
   c) pH Level
   d) Protein
4. What is the level of marketability of prepared SUNSEJACK Peanut Brittle based on the following:
   a) Supply Availability
   b) Product Cost
   c) Consumer Demand
5. Are there significant differences among the evaluations of the three groups of respondents on the Marketability level of the prepared SUNSEJACK Peanut Brittle as regards to the above-mentioned criteria?
6. What are the comments and suggestions of the respondents to further improve the SUNSEJACK Brittle?

Methods

The experimental method was used in this study to determine the acceptability and marketability of SUNSEJACK Peanut Brittle during the academic year 2022-2023 at the Marikina Polytechnic College. To improve the condition of human lives, experimental research has crucial role in the society.

In addition, experimental method of research is defined as systematic and scientific approaches wherein there is an intentional manipulation of one variable while the others are kept constant. Ary et al. (2006) states "Experimental research design is to enable researcher to estimate the effect of an experimental treatment".

Data Gathering Procedures

The gathering of data began with preparation of the survey questionnaires by the researcher. To ensure the validity of the survey questionnaire, the researcher asked ten experts to validate the survey questionnaire. The researcher made necessary revisions on the research instrument as directed by the adviser to make sure that it collects the needed data to complete the study.

To administer the validated survey questionnaire, the researcher ask permission to different group of respondents to conduct a survey in a form of evaluation to measure the acceptability and marketability of SUNSEJACK Peanut Brittle. All questionnaires were personally administered and retrieved by the researcher.

Data Gathering Instrument

A questionnaire checklist is the main instrument used by the researchers for gathering data in Acceptability of SUNSEJACK Peanut Brittle. There were five criteria being evaluated for acceptability by the three groups of evaluators namely, teenager, young adult and adult respondents. The criteria were: Appearance, Aroma, Color, Taste and Texture. A 9-Point Hedonic scale with verbal interpretation was used.

The following were the descriptive value of the scale to evaluate the SUNSEJACK Peanut Brittle as perceived by the teenager, Young Adult and adult respondents as regards to appearance, aroma, color, taste, and texture

Results and Discussion

The evaluation of the three groups of respondents on the acceptability of SUNSEJACK Peanut Brittle with 25%, 50%, and 75% proportion in terms of its appearance, aroma, color, taste, and texture are shown in the tables below.

Table 1. Summary of Respondents' Evaluations on the Level of Acceptability of SUNSEJACK Peanut Brittle with 25% Ratio

Criteria	Respondents					
	Teenagers		Young Adults		Adults	
	OWM	VI	OWM	VI	OWM	VI
a. Appearance	6.59	MA	8.16	VA	7.30	MA
b. Aroma	7.47	MA	8.30	VA	7.46	MA
c. Color	7.50	MA	8.34	VA	7.59	VA
d. Taste	7.62	VA	8.18	VA	7.49	MA
e. Texture	7.40	MA	8.14	VA	7.49	MA
Grand Weighted Mean	**7.27**	**MA**	**8.22**	**VA**	**7.47**	**MA**

Note: OWM – Overall Weighted Mean

It is shown on Table 1, that teenager and adult respondents think that the overall qualities of the 25% ratio SUNSEJACK Peanut Brittle falls under moderately acceptable with an overall weighted mean of 7.27 and 7.47 respectively. On the other hand, data shows that young adults like the 25% SUNSEJACK Peanut Brittle, this is evident in the verbal interpretation of Very Acceptable and an overall mean score of 8.22. The data from the table suggests that young adults tend to like the 25% SUNSEJACK Peanut Brittle when compared to the teenage and adult respondents. This also suggests that the 25% ratio can still be improved around the preferences of teenage and adult respondents.

This is like the study of Caeg et al. (2017) where they investigated the acceptability of sunflower sandwich spread. Three groups of respondents evaluated the product regarding its aroma, appearance, color, and taste. The present study and Caeg's (2017) study are related to each other because both studies utilized sunflower seeds as ingredient to finished product. to determine the level of acceptability

of the product, the researchers used the same criteria of evaluation. However, the differences are the present study add one more criterion of evaluation which is the texture.

Table 2. Summary of Respondents' Evaluations on the Level of Acceptability of SUNSEJACK Peanut Brittle with 50% Ratio

Criteria	Respondents					
	Teenagers		Young Adults		Adults	
	OWM	VI	OWM	VI	OWM	VI
a. Appearance	6.69	MA	8.02	VA	7.35	MA
b. Aroma	7.23	MA	8.13	VA	7.33	MA
c. Color	7.23	MA	8.50	VA	7.71	VA
d. Taste	7.45	MA	8.15	VA	7.70	VA
e. Texture	7.21	MA	8.15	VA	7.74	VA
Grand Weighted Mean	**7.16**	**MA**	**8.14**	**VA**	**7.57**	**VA**

It is shown on Table 2, that teenager respondents think that the overall qualities of the 50% ratio SUNSEJACK Peanut Brittle falls under moderately acceptable with an overall weighted mean of 7.16. On the other hand, data shows that young adult and adult respondents like the 50% SUNSEJACK Peanut Brittle, this is evident in the verbal interpretation of Very Acceptable and an overall mean score of 8.14 and 7.57 respectively. The data from the table suggests that young adults and adults tend to like the 50% SUNSEJACK Peanut Brittle when compared to the teenage respondents. This also suggests that the 50% ratio can still be improved around the preferences of teenage respondents.

The present study and Caeg's (2017) study are related to each other because both studies utilized sunflower seeds as ingredient to finished product. To find out the level of acceptability of the product, both surveys used the same criteria of evaluation. However, the differences are the present study add one more criterion of evaluation which is the texture also the outcome is differ to both study because Caeg's (2017) study focused on making sunflower seeds spread while the present study focused on sunflower, sesame, and jackfruit Peanut Brittle.

Table 3. Summary of Respondents' Evaluations on the Level of Acceptability of SUNSEJACK Peanut Brittle with 75% Ratio

Criteria	Respondents					
	Teenagers		Young Adults		Adults	
	OWM	VI	OWM	VI	OWM	VI
a. Appearance	6.70	MA	7.93	VA	7.13	MA
b. Aroma	7.60	VA	8.07	VA	7.45	MA
c. Color	7.50	MA	8.11	VA	7.48	MA
d. Taste	7.41	MA	8.03	VA	7.49	MA
e. Texture	7.38	MA	8.16	VA	7.62	VA
Grand Weighted Mean	**7.27**	**MA**	**8.06**	**VA**	**7.43**	**MA**

It is shown on Table 3, that teenager and adult respondents think that the overall qualities of the 75% ratio SUNSEJACK Peanut Brittle falls under moderately acceptable with an overall weighted mean of 7.27 and 7.43 respectively. On the other hand, data shows that young adults like the 75% SUNSEJACK Peanut Brittle, this is evident in the verbal interpretation of Very Acceptable and an overall mean score of 8.06. The data from the table suggests that young adults tend to like the 75% SUNSEJACK Peanut Brittle when compared to the

teenage and adult respondents. This also suggests that the 75% ratio can still be improved around the preferences of teenage and adult respondents.

This is in line with the study of Casipit (2017) where the study used to evaluate the appearance, aroma, color, taste, and texture of the "jackpatty". The survey questionnaire was the primary data collection tool used in the experimental research design. Casipit (2017) study and the present study are related to each other because they both utilized jackfruit seeds as ingredients in their product.

Table 4. Summary of Analysis of Variance of Respondents' Evaluations on the Level of Acceptability of SUNSEJACK Peanut Brittle with 25% Ratio

	Criteria	Computed F Value	Critical F Value	Decision	Interpretation
a.	Appearance	13.76	3.10	Reject the H_0	Significant
b.	Aroma	5.03	3.10	Reject the H_0	Significant
c.	Color	9.35	3.10	Reject the H_0	Significant
d.	Taste	3.51	3.10	Reject the H_0	Significant
e.	Texture	4.14	3.10	Reject the H_0	Significant

As seen in Table 4, the assessments of the three groups of respondents on the acceptability of SUNSEJACK Peanut Brittle with 25% ratio pertaining to appearance, aroma, color, taste, and texture indicate significant differences with the computed F values which are above the critical F value. Thus, the respondents' evaluations are varied significantly.

Table 5. Summary of Analysis of Variance of Respondents' Evaluations on the Level of Acceptability of SUNSEJACK Peanut Brittle with 50% Ratio

	Criteria	Computed F Value	Critical F Value	Decision	Interpretation
a.	Appearance	9.36	3.10	Reject the H_0	Significant
b.	Aroma	3.70	3.10	Reject the H_0	Significant
c.	Color	6.95	3.10	Reject the H_0	Significant
d.	Taste	2.85	3.10	Fail to Reject the H_0	Not Significant
e.	Texture	5.49	3.10	Reject the H_0	Significant

Apparent from Table 5, that the evaluations of the young adults, teenagers, and adult respondents on the acceptability of SUNSEJACK Peanut Brittle with 50% ratio pertaining to appearance, aroma, color, and texture signify significant differences between the corresponding computed F values which are more than the critical F value. This shows that the respondents' evaluations are not the same except for taste.

Table 6. Summary of Analysis of Variance of Respondents' Evaluations on the Level of Acceptability of SUNSEJACK Peanut Brittle with 75% Ratio

	Criteria	Computed F Value	Critical F Value	Decision	Interpretation
a.	Appearance	6.09	3.10	Reject the H_0	Significant
b.	Aroma	1.88	3.10	Fail to Reject the H_0	Not Significant
c.	Color	5.03	3.10	Reject the H_0	Significant
d.	Taste	2.70	3.10	Fail to Reject the H_0	Not Significant
e.	Texture	4.31	3.10	Reject the H_0	Significant

As gleaned in Table 6, the evaluations of the teenagers, young adults, and adult respondents on the acceptability of SUNSEJACK Peanut Brittle with 75% ratio pertaining to appearance, color, and texture show significant differences with the respective computed F values which are above the critical F value. This means that the respondents' evaluations are significantly different aside from aroma and taste, where the respondents' evaluations are not significantly different.

Table 7. Result of Physicochemical Analysis of SUNSEJACK Peanut Brittle

ANALYSIS REQUESTED	RESULTS
Carbohydrates	Positive (+)
Moisture Content	3.7107%
pH level	7.1
Protein	Positive (+)

The results for the Physicochemical analysis of SUNSEJACK Peanut Brittle shows the requested contents of the food brittle. The data from the lab analysis shows the presence of carbohydrates and protein in the food brittle sample. The analysis also revealed that the SUNSEJACK seed brittle contains a low amount of moisture, the sample that was analyzed had a moisture content of about 3.7107%. The analyzed SUNSEJACK seed brittle sample had a pH level of about 7.1 which is slightly alkaline.

The results from the physicochemical analysis show similarities to past studies done about sunflower seeds, sesame seeds, and jackfruit seeds. The data is in line with the study of Muttagi (2020), Aglave (2018), and Aldana (2014) about the physicochemical components of sunflower seeds, sesame seeds, and jackfruit seeds respectively. Their studies suggest that the three seeds all contain some amount of carbohydrates, proteins, and moisture. The studies also show that the individual seeds all have a somewhat neutral pH.

Table 8. Summary of Respondents' Evaluations on the Level of Marketability of SUNSEJACK Peanut Brittle with 25% Ratio

	Respondents					
	TLE Teacher/ Instructor		Food Brittle Maker		Seller	
	OWM	VI	OWM	VI	OWM	VI
a. Supply Availability	4.50	HA	4.33	A	4.47	A
b. Production Cost	4.58	HA	4.46	A	4.81	HA
c. Consumer Demand	4.62	HA	4.37	A	4.88	HA
Grand Weighted Mean	**4.57**	**HA**	**4.39**	**A**	**4.72**	**HA**

The data on Table 8 shows the summary for the marketability of the 25% ratio SUNSEJACK Peanut Brittle among the 3 samples. It is shown on the table that the 25% ratio has a Highly Acceptable (HA) rating from TLE Teacher/ Instructor and seller respondents with the grand weighted mean of 4.57 and 4.72 respectively, while food brittle makers think that it is Acceptable (A) with a grand weighted mean of 4.39. The data suggest that the 25% ratio SUNSEJACK seed brittle has a marketability of Acceptable to Highly acceptable among the respondents.

Table 9. Summary of Respondents' Evaluations on the Level of Marketability of SUNSEJACK Peanut Brittle with 50% Ratio

	Respondents					
	Teenagers		Young adults		Adults	
	OWM	VI	OWM	VI	OWM	VI
a. Supply Availability	4.43	A	4.24	A	4.51	HA
b. Production Cost	4.55	HA	4.44	A	4.77	HA
c. Consumer Demand	4.59	HA	4.46	A	4.89	HA
Grand Weighted Mean	**4.52**	**HA**	**4.38**	**A**	**4.72**	**HA**

The data on Table 9 shows the summary for the marketability of the 25% ratio SUNSEJACK Peanut Brittle among the 3 samples. It is shown on the table that the 50% ratio has a Highly Acceptable (HA) rating from TLE Teacher/ Instructor and seller respondents with the grand weighted mean of 4.52 and 4.72 respectively, while food brittle makers think that it is Acceptable (A) with a grand weighted mean of 4.38. The data suggest that the 50% ratio SUNSEJACK seed brittle has a marketability of Acceptable to Highly acceptable among the respondents.

Table 10. Summary of Respondents' Evaluations on the Level of Marketability of SUNSEJACK Peanut Brittle with 75% Ratio

	Respondents					
	Teenagers		Young adults		Adults	
	OWM	VI	OWM	VI	OWM	VI
a. Supply Availability	4.39	A	4.33	A	4.53	HA
b. Production Cost	4.48	A	4.50	HA	4.83	HA
c. Consumer Demand	4.65	HA	4.62	HA	4.86	HA
Grand Weighted Mean	**4.51**	**HA**	**4.48**	**A**	**4.74**	**HA**

The data on Table 10 shows the summary for the marketability of the 25% ratio SUNSEJACK Peanut Brittle among the 3 samples. It is shown on the table that the 75% ratio has a Highly Acceptable (HA) rating from TLE Teacher/ Instructor and seller respondents with the grand weighted mean of 4.51 and 4.74 respectively, while food brittle makers think that it is Acceptable (A) with a grand weighted mean of 4.48. The data suggest that the 75% ratio SUNSEJACK seed brittle has a marketability of Acceptable to Highly acceptable among the respondents.

Table 11. Summary of Analysis of Variance of Respondents' Evaluations on the Marketability Level of the Prepared SUNSEJACK Peanut Brittle with 25% Ratio

Criteria	$F_{computed}$ Value	$F_{Critical}$ Value	Decision	Interpretation
a. Supply Availability	0.70	3.10	Fail to Reject the H_0	Not Significant
b. Production Cost	4.26	3.10	Reject the H_0	Significant
c. Consumer Demand	6.04	3.10	Reject the H_0	Significant

Analysis to Table 11, that the evaluations of the teenagers, young adults, and adult respondents on the marketability of SUNSEJACK Peanut Brittle with 25% ratio in terms of production cost and consumer demand indicate significant differences with the respective computed F values which are more than the critical F value. This means that the respondents' evaluations are different except for supply availability.

Table 12. Summary of Analysis of Variance of Respondents' Evaluations on the Marketability Level of the Prepared SUNSEJACK Peanut Brittle with 50% Ratio

Criteria	$F_{computed}$ Value	$F_{Critical}$ Value	Decision	Interpretation
a. Supply Availability	1.53	3.10	Fail to Reject the H_0	Not Significant
b. Production Cost	2.97	3.10	Fail to Reject the H_0	Not Significant
c. Consumer Demand	5.61	3.10	Reject the H_0	Significant

It can be viewed in Table 12 that the evaluations of the teenagers, young adults, and adult respondents on the marketability of SUNSEJACK Peanut Brittle with 50% ratio in terms of supply availability and production cost denote significant differences with the corresponding computed F values which are lesser than the critical F value. This suggests that the respondents' evaluations are the same excluding consumer demand.

Table 13. Summary of Analysis of Variance of Respondents' Evaluations on the Marketability Level of the Prepared SUNSEJACK Peanut Brittle with 75% Ratio

Criteria	$F_{computed}$ Value	$F_{Critical}$ Value	Decision	Interpretation
a. Supply Availability	0.80	3.10	Fail to Reject the H_0	Not Significant
b. Production Cost	3.72	3.10	Reject the H_0	Significant
c. Consumer Demand	2.27	3.10	Fail to Reject the H_0	Not Significant

As reflected in Table 13, the evaluations of the young adults, teenagers, and adult respondents on the marketability of SUNSEJACK Peanut Brittle with 75% ratio in terms of supply availability and consumer demand denote significant differences with the corresponding computed F values which are below the critical F value. This means the respondents' evaluations are the same except for production cost.

Conclusion

1. Teenagers tend to give the Acceptability level an overall weighted mean that falls under Moderately Acceptable (MA) across the three different ratios of the SUNSEJACK seed brittle. Young adults on the other hand think that the acceptability rating of all three ratios of the SUNSEJACK seed brittle is Very Acceptable (VA) which suggest the young adult respondents liked the appearance, aroma, color, taste, and texture of the 25%, 50%, and 75% ratios. As for adult respondents, they gave the 25% and 75% ratio of SUNSEJACK Peanut Brittle an evaluation of Moderately acceptable, while giving the 50% ratio an acceptability level of Very Acceptable (VA).
2. The evaluations of the three groups of respondents on the acceptability of SUNSEJACK Peanut Brittle with 25% ratio pertaining to appearance, aroma, color, taste, and texture indicate that there are significant differences between the computed F values and the critical F value. Thus, the respondents' evaluations are varied significantly. On the other hand, the evaluation of the respondents on the acceptability of SUNSEJACK Peanut Brittle with 50% ratio pertaining to appearance, aroma, color, and texture signify significant differences between the corresponding computed F values which happen to be greater than the critical F value. This shows that the respondents' evaluations are not the same except for taste. Finally, their evaluations on the acceptability of SUNSEJACK Peanut Brittle with 75% ratio pertaining to appearance, color, and texture show significant differences between the respective computed F values which are above the critical F value. Therefore, the respondents' evaluations are different significantly. Then, in terms of aroma and taste, respondents' evaluations are the same.

3. The SUNSEJACK Peanut Brittle contains carbohydrates, protein, a moisture content of 3.7107%, and a pH of 7.1.
4. TLE Teacher/instructor and Seller respondents gave all three ratios of the SUNSEJACK Peanut Brittle a marketability level of Highly Acceptable (HA) while Food Brittle Maker respondents gave an evaluation of Acceptable (A).
5. There are no significant differences among the evaluations of the three groups of respondents on the level of marketability of SUNSEJACK Peanut Brittle with 25%, 50%, and 75% ratios in terms of supply availability. On the other hand, there is a significant difference among the evaluations of the three groups of respondents on the level of marketability of SUNSEJACK Peanut Brittle with 25% and 75% ratios in terms of production cost while no difference can be seen in the 50% ratio. Finally, there is a significant difference among the evaluations of the three groups of respondents on the level of marketability of SUNSEJACK Peanut Brittle with 25% and 50% ratios in terms of consumer demand while no difference can be observed in the 75% ratio.

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References

Abhirami, K., & Karpagapandi, L. (2018). Nutritional evaluation and storage stability of multigrain Nutri-chikki. ~ *3253 ~ International Journal of Chemical Studies*, *6*(5), 3253–3259. https://www.chemijournal.com/archives/2018/vol6issue5/PartBE/6-5-397-324.pdf

Aglave. (2018). Physiochemical characteristics of sesame seeds. ~ *64 ~ Journal of Medicinal Plants Studies*, *6*(1), 64–66.

Anilakumar, Kandangath, Raghavan, Pal, A., Khanum, F., & Bawa, A. S. (2010). Nutritional, Medicinal and Industrial Uses of Sesame (Sesamum indicum L.) Seeds - An Overview. *Agriculturae Conspectus Scientificus*, *75*(4), 159–168.

D.L.M. Aldana, B.T. Gómez, M.M.M. Oca, S.G.S. Ayer di, F.G. Meraz, L.A.B. Pérez, Isolation and characterization of Mexican jackfruit (*Artocarpus heterophyllus* L) seeds starch in two mature stages

Devhare Pf, Kotecha Pm, Godse Sn, & Chavan, U. D. (2021). *Studies on utilization of pomegranate juice in the preparation of peanut chikki*. ResearchGate; unknown.

https://www.researchgate.net/publication/348916325_Studies_on_utilization_of_pomegranate_juice_in_the_preparation_of_peanut_chikki

Gisstein, R. (2007) Introduction of Culinary Operations (The Basic of Professional Cooking). Philippines: Skills and Development and management services Inc., 2006.Ingram, Christine. 1900 Ingredients a classic reference encyclopedia of word food. New Zealand.

Hossain, M. T. (2014). Development and quality evaluation of bread supplemented with jackfruit seed flour. International Journal of Nutrition and Food Sciences, 3(5), 484. http://dx.doi.org/10.11648/j.ijnfs.20140305.28 (Date Retrieved, November 22, 2021)

http://dx.doi.org/10.2306/scienceasia1513-1874.2002.28.037 (Date Retrieved, December 4, 2020)

http://www.eatingwell.com/article/290417/what-is-jackfruit-and-should-you-eat-it/ (Date Retrieved, December 8, 2020)

http://www.whfoods.com/genpage.php?tname=foodspice&dbid=57 (Date Retrieved, January 12, 2021)

https://articles.extension.org/pages/67354/feeding-sunflower-seed-meal-to-poultry (Date Retrieved, November 25, 2020)

https://doi.org/10.1590/1981-6723.20718 (Date Retrieved, November 27, 2021)

https://doi.org/10.7831/ras.8.0_170 (Date Retrieved, November 27, 2021)

https://healthfully.com/402646-bodybuilding-and-sunflower-seeds.html (Date Retrieved, February 27, 2021)

https://hrcak.srce.hr/66001?fbclid=IwAR2Pvi_GMWWixnI8ftW50vqylm5E2W2nn5eQTcdTNL2z_NNT7gQl_f5G0Jk&lang=hr

https://medium.com/@HLAgroProducts/sesame-seed-market-trends-a-global-perspective-5ef54ec3659c (Date Retrieved, February 27, 2021)

https://www.healthline.com/nutrition/jackfruit-benefits (Date Retrieved, November 25, 2020)

https://www.livestrong.com/article/546837-nutrition-in-boiled-jackfruit-seeds/ (Date Retrieved, January 12, 2021)

https://www.plantsjournal.com/archives/2018/vol6issue1/PartB/6-1-9-731.pdf (Date Retrieved, December 4, 2020)

https://www.stylecraze.com/articles/benefits-of-jackfruit-seeds-for-skin-hair-and-health/ (Date Retrieved, January 12, 2021)

Hurt, E. F. (1948). Sunflower for Food, Fodder and Fertility, London: Faber and Faber Ltd..

Lakshmi, V., Appugol, K., Mangang, I., & Jagan, M. (2022). Development of Fig Chikki using Fig powder (Ficus Carica) and its storage stability studies. *Biological Forum -an International Journal*, *14*(3), 245. https://www.research-trend.net/bfij/pdf/43%20Development%20of%20Fig%20Chikki%20using%20Fig%20powder%20(Ficus%20Carica)%20and%20its%20storage%20stability%20studies%20Vidhya%20Raja.pdf

Lathlean, B. 1968. Sunflower — a major new oil crop. Meggitt Leadership, 22: 3

Muttagi, G. C., & Joshi, N. (2020). *Physico-chemical composition of selected sunflower seed cultivars*.

P. F. Devhare*, P. M. Kotecha, S. N. Godase and U. D. Chavan (2020) Studies on Nutritional Quality of Pomegranate Peel Powder Peanut chikki. International Journal of Current Microbiology and Applied Sciences ISSN: 2319-7706 Special Issue-11 pp. 4081-4089

Panchenko, A. Y. 1966. Sunflower production and breeding in the USSR. Proc. 2nd Int. Sunflower Conf. August1966, Morden, Manitoba. pp.16

Reyes, C. & Jocelyn S. (2009) Food Selection and Preparation Manual. Intramuros Manila: Mindshapers Co. Inc.

Robinson, R. G. 1973. The Sunflower Crop in Minnesota, Extension Bulletin 299 St. Paul: Agricultural Extension Service, University of Minnesota.

Sonoma, W. (2000) Kitchen Companion (The A-to-Z guide to everyday cooking, equipment and ingredients). New York.

Suslov, V. M. 1968. Economical significance of sunflowers in the U.S.S.R. Proc. 3rd Int.

Sunflower Conf. August13–151968, Crookston, Minnesota. pp.1

Tidke, B., Sharma, & Kumar, N. (2017). Development of peanut and chickpea nut brittle (Chikki) from the incorporation of sugar, jaggery and corn syrup. *International Food Research Journal*, *24*(2), 657–663. http://www.ifrj.upm.edu.my/24%20(02)%202017/(27).pdf

Tottalla, C., Jessie, H., Prakash, S., & Mehdipatnam, 1&2. (2021). *DEVELOPMENT OF LOW COST PROBIOTIC CHIKKIES AS FOOD SUPPLEMENTS FOR THE BENEFIT OF HUMAN HEALTH*. http://s3-ap-southeast-1.amazonaws.com/ijmer/pdf/volume10/volume10-issue6(8)/13.pdf

Tulyathan, V., Tananuwong, K., Songjinda, P., & Jaiboon, N. (2002). Some physicochemical properties of jackfruit (Artocarpus heterophyllus Lam) seed flour and starch. ScienceAsia, 28(1), 37-41.

Waghmare, R., Memon, N., Gat, Y., Gandhi, S., Kumar, V., & Panghal, A. (2019). Jackfruit seed: an accompaniment to functional foods. *Brazilian Journal of Food Technology*, *22*.

Wang, X., Stephen Njehia, N., Katsuno, N., & Nishizu, T. (2020). An Acoustic Study on the Texture of Cellular Brittle Foods. *Reviews in Agricultural Science*, *8*(0), 170–185.

Yadav, K., Kumari, S., & Singh, S. (2019). Development and quality assessment of fortified brittle (chikki) prepared by using sesame seed, jaggery, flaxseed, and ragi flour. *~ 24 ~ the Pharma Innovation Journal*, *8*(8), 24–28. https://www.thepharmajournal.com/archives/2019/vol8issue8/PartA/8-7-124-670.pdf