



Daffodil
International
University

A PROJECT WORK REPORT

On

Functional Oats Drinks

Submitted To

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Submitted by

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Date of submission : 15-12-2019

LETTER OF TRANSMITTAL

Date: 15th December 2019

To

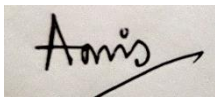
Professor Dr. Md. Bellal Hossain
Head
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Subject: Submission of Project Report.

Dear Sir,

With respect, I would like to inform you that I have completed my project report on “Functional Oats Drinks. I have tried to my level best to focus the project report for consistency with the optimal standard under your valuable direction.

I express my gratitude to you for your kind supervision and I hope that you will consider all my mistakes generously.

A handwritten signature in black ink that reads "Anis" with a long horizontal stroke extending to the right.

Sincerely Yours,

K.M.Anisur Rahman
ID: 163-34-577
Department of Nutrition and Food Engineering
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LETTER OF AUTHORIZATION

Date: 15 December 2019

To

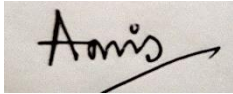
Professor Dr. Md. Bellal Hossain
Head
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Subject: Declaration regarding the validity of the Project Report.

Dear Sir,

This is my truthful declaration that the “Project Report”. I have prepared is not a copy any thesis report previously made any other students.

I also express my honestly confirmation in support to the fact that the said thesis report has neither been used before to fulfill my other course related not it will be submitted to any other person a authority in future.

A handwritten signature in black ink on a light-colored background. The signature reads "Anis" in a cursive style, with a long horizontal stroke extending to the right from the end of the word.

Sincerely Yours,

K.M.Anisur Rahman
ID: 163-34-577
Department of Nutrition and Food Engineering
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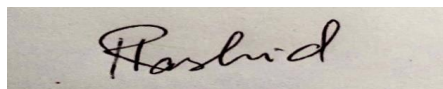
CERTIFICATION OF APPROVAL

I am satisfied to certify that the project report on “Functional oats drinks” conducted by K.M.Anisur Rahman Carrying ID: 163-34-577, Department of Nutrition and Food Engineering, Faculty of Allied Health Sciences, Daffodil International University; has been approved for presentation and defense for the academic degree.

K.M.Anisur Rahman bears a strong moral character and an extremely satisfying identity. It has in fact been an extraordinary delight working with him. I wish him all achievement in life.



Professor Dr. Md. Bellal Hossain
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ACKNOWLEDGEMENT

At the very beginning, I would like to express my deepest gratitude to almighty Allah for giving me the strength & the composure to complete the thesis paper.

I am grateful to my parents without whom I cannot be here. Without the support of my parents, I could not be able to achieve my objectives and goals.

I would like to express my gratitude to Professor. Dr. Md. Bellal Hossain, Head of the Dept. of Nutrition and Food Engineering, Daffodil International University for creating this enormous scope of practical knowledge in the curriculum and providing me valuable guidance to complete my work.

I am deeply indebted to my Supervisor, Lecturer, Md. Harun-Ar Rashid, Lecturer, Department of Nutrition and Food Engineering, Daffodil International University for her whole- hearted supervision during my organizational attachment period. It would have been very difficult to prepare this report up to this mark without their guidance.

I would like to express my warmest thanks to NFE Faculty members for their countless inspiration and encouragement during the student life.

ABSTRACT

This study is conducted to process “Functional oats drinks”. In the present work, an entire grain oat substrate was matured with lactic corrosive microscopic organisms to get a beverage, joining the medical advantages of a probiotic culture with the oat prebiotic beta-glucan. The degrees of a few elements, for example, starter culture fixation, oat flour and sucrose content, influencing the maturation procedure, were built up for finishing a controlled aging for 8 h. The practical cell tallies came to at the end of the procedure were about 7.5×10^{10} cfu ml⁻¹. It was discovered that the expansion of sugars aspartame, sodium cyclamate, saccharine and Huxol (12% cyclamate and 1.2% saccharine) had no impact on the elements of the maturation procedure and on the reasonability of the starter culture during item stockpiling. Beta-glucan content in the beverage (0.31–0.36%) stayed unaltered both all through aging and capacity of the drink. The timeframe of realistic usability of the oat drink was evaluated to 21 days under refrigerated stockpiling.

Keywords: Oats, functional oats drinks.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The oat (*Avena sativa*), once in a while called the regular oat, is a types of oat grain developed for its seed, which is known by a similar name (as a rule in the plural, in contrast to different oats and pseudo cereals). While oats are reasonable for human utilization as cereal and moved oats, one of the most widely recognized uses is as animals feed. Oats are a supplement rich nourishment related with lower blood cholesterol when expended regularly.

This examination is led to process "Functional oats drinks". Oat have been cultivated since around 2000 years prior. In Sweden, the oat development began all the more genuinely in the eighteenth century and blasted toward the finish of the 1880-1890s, when oats were practically 50% of the Swedish grain creation. Oats are developed in mild locales, requiring lower summer heat and having more prominent resistance to rain than most different grains. This beverages are sound and simple procedure. This beverages are prepared to it item. Oats it's perceived as a restorative and nutritious oat nourishment containing high convergence of solvent fiber and thick supplements incorporate. Independent of healthfully rich oat, it has physiological advantages like constructive outcome on decreasing hyperglycemia, hyperinsulinaemia, hypercholesterolemia and a few different advantages are examined in this audit.

The principle part of the physiological impacts of oat dissolvable fiber is because of the height of thickness and that is because of solvent fiber, for example, (1→3, 1→4) - β - D-glucan or β -glucan. B-Glucan has been appeared to have impacts on the glyceimic, insulin, and cholesterol reactions to nourishments. Oats are great hotspots for these utilitarian fixings like β -glucan, with thinks about plainly showing their potential medical advantages. Oats contains exceptionally supplements. Oats drinks are plant based beverage. The procedure of making oats drink as a basic simply mix in water. This beverages a piece of characteristic beverage. Oats are for the most part eaten as an element of breakfast oats. Oats its prevalent "solid nourishment".

The utilitarian nourishment advertise has growing all inclusive because of the way of life change. The inactive ways of life urge individuals to pick practical nourishments (Wan and Xu, 2018). Stein and Cerezo have evaluated that a 60 billion euros market of practical nourishment has move in 2014. Among all practical nourishment useful refreshment buyers are expanding far and wide. Fiber invigorated refreshment is in the top decision. It offers the purchaser another alternative to build the fiber admission. Despite the fact that there are numerous sorts of fiber in the choice however the beta glucan get the most noteworthy inclination. Beta glucan have blood cholesterol bringing down impacts, low glyceimic impact and aides in keeping up stomach related wellbeing. Oat is the rich wellsprings of beta glucan (Tateandlyle.com, 2019). Banana is a decent wellspring of supplements with incredible taste, smell and various medical advantages (Slavin, 2013).

Accordingly, there is a tremendous potential to create oat based beverage.

Oats are briefly develop in the tropical and sub-tropical nation in the entire world. Most generally develop Sweden.in Bangladesh oats are modest quantity development. Oat are very supplements cereals. Its contains fiber, nutrient, and starch. Usually oats are utilized in oats milk, oats scones, oats drinks. Oats fundamentally plant based oats nourishment. Oats are extremely sound nourishment of the world. During the 1850s, Ferdinand Schumacher and Robert Stuart

established Oat Mills. Oats are yearly grasses, and are utilized as both for both human and creature sustenance, notwithstanding different purposes. They are a usually developed yield on the planet today. Be that as it may, they carry with them a to some degree violent history. Oats were acquainted with North America with different grains by Scottish pilgrims in 1602. They slowly turned into a significant harvest until around 1920, when machines started to supplant torque. Land recently dedicated to encourage oats has now been supplanted by soybeans, an increasingly attractive harvest .With the development of information about nourishment, oats were perceived as a solid nourishment in the mid 1980's and in this way may turn out to be progressively well known by and by for human sustenance. Oats drinks help to diabetic's patient.

In 2017, worldwide creation of oats was 26 million tons, a 13% expansion over 2016. [7] Production was driven by Russia with 21% of the aggregate and Canada with 14% (table). Other considerable makers were Australia, Poland, China, and Finland, each with more than one million tons.



Fig 1.1: Oats

1.2 Aim of this Study:

The point of the present work was to build up a synbiotic functional drink from oats by joining a probiotic starter culture and entire grain oat substrate.

Oats drinks are very healthy food that's why this oats drink product development in Bangladesh. And market supply to the whole people. This people consume the healthy rich food. If oats drinks are supply this country this people are consume this drinks.

Product development of oats drinks. Most group of people are effected diabetics dieses so the oats drinks are helpful to consume this people. Aim of this study are increasing the shelf life and develop the color flouer. Oats are very nutrients cereal based food. so make and development this drink and supply the local market. Development and increase the self-life and modify the drinks with almonds, dates or honey.

1.3 Oats in Bangladesh:

Oats are small amount cultivation in Bangladesh. Especially oats cultivate in Sathkhira, Gopalgong, and north Bengal in Bangladesh. Oats is set up from oats, which is a sort of oat grain. Its herbal name is *Avena sativa*. Oats is set up by moving, pounding, or crushing oats into a coarse powder. Botany name of oats are *Avena sativa*. This article is about the regular oat. For different uses, see Oat (disambiguation).

"Oats" diverts here. For other developed and wild types of the variety, see *Avena*.

In 2017, worldwide creation of oats was 26 million tons, a 13% expansion over 2016.[7] Production was driven by Russia with 21% of the aggregate and Canada with 14% (table). Other significant makers were Australia, Poland, China, and Finland, each with more than one million tonnes.[

1.4 Nutrients and Health benefit of oats:

Oats contain differing fundamental supplements (table). In a 100 gram serving, oats give 389 kilocalories (1,630 kJ) and are a rich source (20% or a greater amount of the Daily Value, DV) of protein (34% DV), dietary fiber (44% DV), a few B nutrients and various dietary minerals, particularly manganese (233% DV) (table). Oats are 66% sugars, including 11% dietary fiber and 4% beta-glucans, 7% fat and 17% protein (table).

They're a without gluten entire grain and an incredible wellspring of significant nutrients, minerals, fiber and cancer prevention agents. Studies show that oats and oats have numerous medical advantages. These incorporate weight reduction, lower glucose levels and a diminished danger of coronary illness.

Oats are among the most beneficial grains on earth.

They're a sans gluten entire grain and an extraordinary wellspring of significant nutrients, minerals, fiber and cancer prevention agents.

Studies show that oats and oats have numerous medical advantages.

These incorporate weight reduction, lower glucose levels and a diminished danger of coronary illness.

1.5 Uses of oats:

Oats are plant based cereals. Its contain many nutrients. Oats is high nutrients food. Oats are differently uses of foods. Oats have various uses in nourishments; most generally, they are folded or squashed into oats, or ground into fine oat flour. Cereal is mostly eaten as porridge, yet may likewise be utilized in an assortment of heated products, for example, oatcakes, oats treats and oat bread. Oats are additionally a fixing in numerous cool grains, specifically muesli and granola. Oats are likewise utilized for generation of milk substitutes ("oat milk").



Fig 1.5: Oats biscuits

- Functional oats drinks: oats drinks are very easy process. All group of peoples are have eaten this drinks. oats drinks are very sweet able and nutritious drinks.
- Oat Milk: This rich non-dairy milk is one of my preferred approaches to use oats' sweet flavor and flawless surface. Oat milk is anything but difficult to make:

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essentially marvel around 1 cup oats with 3 to 4 cups water in a blender until smooth (include pretty much depending how thick you like your milk). Chill and fill in as you would any non-dairy milk.

- **Elective Whole Grain Flour:** Oats can undoubtedly be ground into a delectable and flexible flour, which would then be able to be utilized in anything from newly heated bread to treats and cakes, thus significantly more. To crush oats, basically spin them through an espresso processor, nourishment processor, or fast blender until they change into a uniformly ground flour. Substitute up to 2/3 of the measure of generally useful flour called for in plans with your crisp ground oat flour.
- **Stew Thickener:** Use oats, entire or ground, as a thickener for stews by just hurling in a tablespoon or two of oats or oat flour to your stew or soup after it has been cooked and stew for 5 to 10 minutes until thickened. This works particularly incredible for stew
- **Smoothie Booster:** There's not any more productive of an approach to add mass to your morning meal smoothie than by including a spoonful or two of oats. For a tasty and nutritious beginning to your day, attempt a smoothie made with a solidified banana, a bunch of berries, a little scoop of nut margarine, and 2 tablespoons oats mixed with cold nondairy milk.
- **Granola Base:** obviously, we can't examine the delights of oats without referencing natively constructed granola! It's so natural, you might be enticed to never purchase locally acquired again. This essential formula is an incredible beginning and can without much of a stretch be made veggie lover by subbing the nectar with agave or maple syrup.
- **Pie Crust:** If you're searching for a simple pie outside layer that packs a touch of sustenance, look no further. Oats can be utilized instead of squashed graham saltines in customary cheesecake outsides, by blending around 1 cup of them with 3 tablespoons softened margarine or coconut oil and squeezing into your pie skillet. Heat for 10 minutes at 400 F. For a considerably less difficult technique, sprinkle some toasted oats on the base of the pie skillet and pour the cheesecake directly over top and heat as coordinated.

- No-Bake Cookies: It's difficult to oppose a new group of no-heat treats, and oats are a pivotal piece of making these heavenly pieces. I like to keep a sack of moved oats around so I can without much of a stretch, and rapidly, prepare a clump of treats at whatever point the hankering strikes and I'm not in the state of mind to heat!

1.6 The main purpose of this study that:

Oats are very low cultivation on Bangladesh. and peoples are very low consume the oats. even oats do not found at local market. Oats are very poor supply on market. Peoples are thinks oats are very rich food on Bangladesh.

That's why The main purpose of oats drinks at develop the drinks. product development and supply to the local market. And costing

Are low and peoples are consume the drinks. presenting this drinks which nutrients and good side this drinks.

To get ready oat drinks and break down the textural properties,

To expand the capacity of the beverages,

To discover shopper worthiness of the beverages.

In this examination, the consistency of 2 oat-based grains was estimated and its impacts on satiety were assessed. Steady with the theory, a morning meal feast comprising of cereal expanded totality and stifled appetite, want to eat, and planned admission, bringing about a decrease in vitality consumption at lunch, contrasted with an oat-based RTEC. The substance, sub-atomic weight, and sweep of gyration of the β -glucan in cereal were higher than that of the β -glucan in the RTEC, which in all probability added to the higher consistency created by oats.

1.7 Specific objectives of oats drinks:

To study proximate composition of Oats drinks

To analyze the effect of temperature on the physical properties of Oats drinks.

To determine the general acceptability of Oats drinks in terms of sensory qualities (appearance, odor, taste, general acceptability).

CHAPTER 2

MATERIALS AND METHODS

2.1 Materials and Methods

The study was conducted in the Laboratories of the Department of Nutrition and Food Engineering, Daffodil International University, Dhaka.

2.2 Collection of Raw Materials

The fresh, mature Oats was collected from the local market. The pulp of oats was used to prepare Oats drinks.

2.3 Methodology

The study on the Development of Oats drinks was made using the following equipment, ingredients and utensil.

The oat beverages will made in the wake of splashing it medium-term and afterward mixing in a blender. At that point banana, almonds, dates or nectar will add to improve the taste.

.

2.4 Apparatus and Equipment

- Electric measuring blance
- Blender
- Beaker
- Spatula
- Knife
- Chopping board
- Aluminum foil
- stove

2.5 Ingredients

Oats milk	800gm
Almonds	100gm
Dates	50gm
Banana	100gm
Sugar	50gm

Fig 2.5 : Ingredients of Oats Drinks

2.6 .Methods:

At first oats are take on a beaker on the hot water at 30 minute. Then this oats are blend and make oats milk. Then filtration on muslin cloth. Banana are washed the water then banana are cut the pieces. Dates are washed the fresh water.and cut the pieces. Almonds washed and cut the pieces. Then sugar are blended and mixer with oats,banana,almonds,and dates.then the blend at 5 minute. At last make the oats drinks.

➤ Fruit selection. Several requirements need to be met:

Lack of insect infestation.
Lack of mechanical injuries.
Check the stage of maturity .
Check colour and texture .

➤ Washing

Banana ,dates, almonds, are washing by water containing 15 ppm chlorine in order to reduce microbial load. A second washing with clean water.

➤ Peeling and cutting

Pulp is separated from the seed with knives, on a chopping board.
Then banana and dates are cut in similar small pieces are placed in clean plastic containers.



Fig 2.6 : Cutting the ingredients

Blending:

After peeling and slicing, the all ingredients pieces are blending with blender.

➤ Packing:

Caning or bottling as storage at long shelf life.

➤ Storage:

Cool and dry place storage.

2.7 Flow chart of Oats drinks:

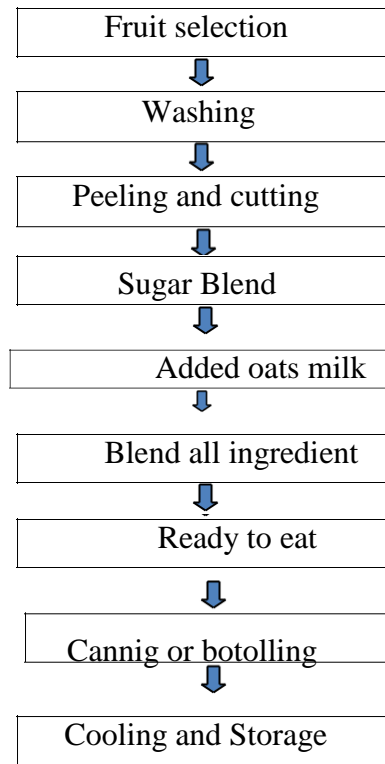


Figure 2.7: Flow chart of Oats drinks

CHAPTER 3

Chemical Analysis of Oats Drinks

3.1 Sensory Test

➤ Chemicals / Equipment Required:

No chemicals are required.

➤ Procedure:

Oats drinks is tested by physical/sensory method.

This is done by using of eye, nose, and tongue.

➤ Result:

If the Oats Drinks is discolored, smell is not change, and the test is not so change. But, if you swallow the drinks you feel acidity .Those Oats drinks are must be rejected due to acidity test, discolored and microbial spoilage.

3.2 Determining soluble solids content (% sugar or °Brix)

The percentage sugar, measured in degrees Brix (°Brix), indicates the sweetness of the fruit by measuring the number of soluble solids in the drinks .

➤ Equipment:

- Refractometer
- Fresh Oats drinks.

➤ Procedure:

- Collect a refractometer.
- Ensure that the refractometer prism surface is dry and clean .
- Focus and the reading if it is not seen 0 need to calibrate.

- A small amount of fresh juice (1 or 2 drops is sufficient) place a into the prism of the refractometer.
- Look the pointing of the prism in the direction of good light.
- Focus and take the reading, where the base of the blue color sits on the scale and record the % percentage sugar (°Brix).
- Clean and dry the refractometer immediately with a tissue.

➤ Result:

The Result of °Brix reading is °Brix of the sample. Oats drinks brix are 9

3.3 pH Test

➤ Chemicals & Equipment Required:

- pH meter
- Beaker

➤ Procedure:

- Take the Sample in a Beaker.
- Deep the pH meter into it.
- Note down the reading

➤ Result:

The collected pH meter reading is the pH of the sample. Oats drinks PH are 9.62

CHAPTER 4

Nutritional Value and Health Benefits of Oats Drinks

4.1 Nutritional value of Oats drinks

Energy carbohydrate fat fiber protein vitamin riboflavin calcium (100ml) Of Oats drinks.

Property	Oats Drinks
Vitamin d	1.5g
Energy	193kj
Vitamin B12	0.38g
Fat	1.kg
Carbohydrate	0.2g
Calcium	120 mg
fiber	0.8g
Protein	1.0g
riboflavin	0.21 mg

Figure 4.1: Table - Nutrition value of Oats drinks

4.2 Health Benefits of Oats Drinks

They're asana gluten entire grain and an extraordinary wellspring of significant nutrients, minerals, fiber and cell reinforcements. Studies show that oats and oats have numerous medical advantages. These incorporate weight reduction, lower glucose levels and a diminished danger of coronary illness.

❖ Oats and coronary artery disease

They found that eating nourishments wealthy in entire oat wellsprings of dissolvable fiber (oats, oat grain, and oat flour) may help diminish the danger of coronary illness.

❖ Colorectal cancer

The study found that for each extra 10 grams for every day of fiber in somebody's eating routine there is a 10 percent decrease in their danger of creating colorectal malignancy. The creators finished up, "A high admission of dietary fiber, specifically, oat fiber and entire grains, was related with a decreased danger of colorectal malignant growth."

❖ Blood pressure

They found that three segments for every day can "significantly lessen cardiovascular sickness chance in moderately aged individuals chiefly through circulatory strain bringing down instruments."

❖ Digestion and obesity

Entire grains are frequently suggested for their gainful consequences for the gastrointestinal tract. The analysts propose potential wellbeing impacts running from improved invulnerable wellbeing to lessening the danger of heftiness and ceaseless sickness

❖ Antioxidants in oats

Oats contain a scope of particles that go about as cancer prevention agents; this incorporates avenanthramides, which are polyphenols. Avenanthramides may assume a job in keeping pulse low Trusted Source by expanding nitric oxide generation. They could likewise have calming and against itching Trusted Source properties when applied topically to the skin.



Fig: Oats drinks

CHAPTER 5

Result and Discussion of Oats Drinks

5.1 Chemical Composition of Oats drinks

Sample	`brix	PH
SAMPLE-1	9`	9.62

Figure: Chemical composition

S1: 500 ml + 5% sugar.

Sensory Evaluation

I conducted a survey among 20 students of Daffodil International University.

Total data are submitted below.

Name :						Product : Guava juice				
Panelist No :						Date :				
<p>Instructions: Taste the given samples, then place a \surd mark on the point in the scale which best describes your feeling.</p>										
SCORE	SAMPLE CODE									
	S1 9 ⁰ Brix									
	Appearance	Flavor	Taste	Texture	Overall Acceptance	Appearance	Flavor	Taste	Texture	Overall Acceptance
(9) Like extremely	6	7	7	11	8					
(8) Like very much	4	10	10	8	6					
(7) Like moderately	10	3	3	1	6					
(6) Like slightly										
(5) Neither like nor dislike										
(4) Dislike slightly										
(3) Dislike moderately										
(2) Dislike very much										
(1) Dislike extremely										

Figure 5.2: Table - Sensory Evaluation

In sample Oats drinks with 5% sugar



Figure 5.2.1: Bar chart of sensory evaluation - Appearance Preference.

Figure 5.2.1 shows the appearance attributes of Oats drinks bar charts in 9 point hedonic scales. The bars showed that Sample-1 containing 1000ml Oats drinks with 5% sugar got the highest score as liked very muc

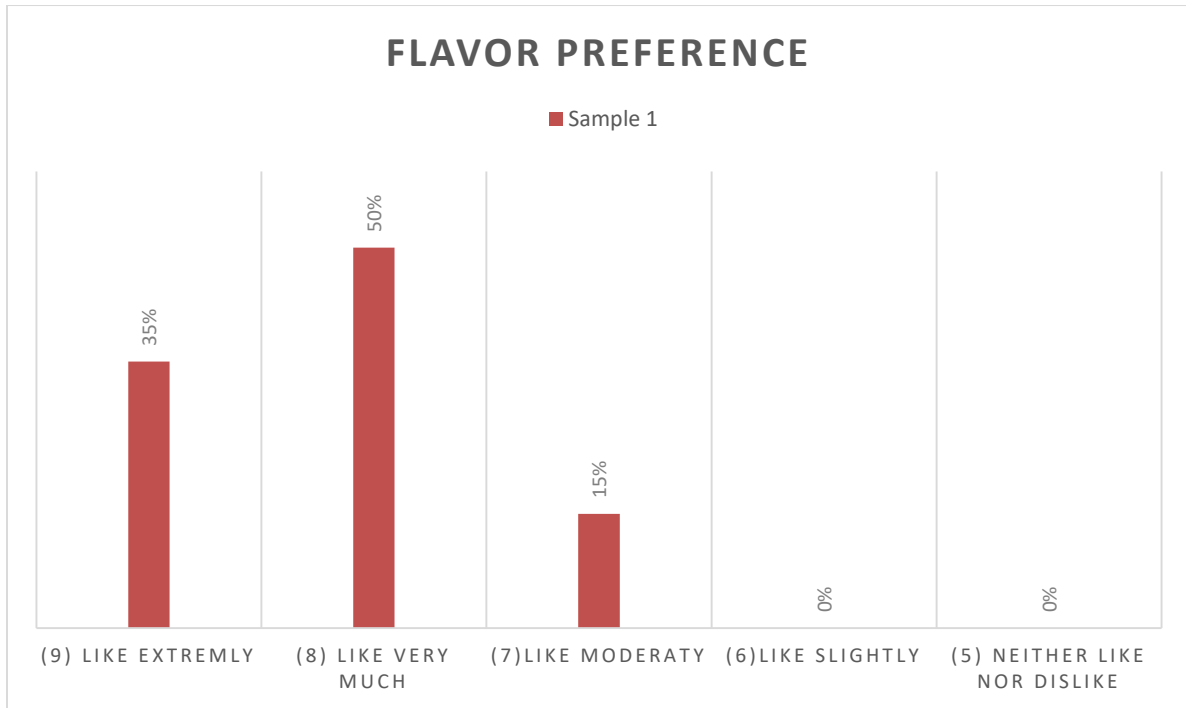


Fig 5.2.2: Bar chart of sensory evaluation - Flavor Preference

Figure 5.2.2 shows the flavor attributes of Oats drinks in bar charts in 9 point hedonic scales. The bars showed that Sample-1 containing 1000ml Oats drinks with 5% sugar got the highest score as liked very much.

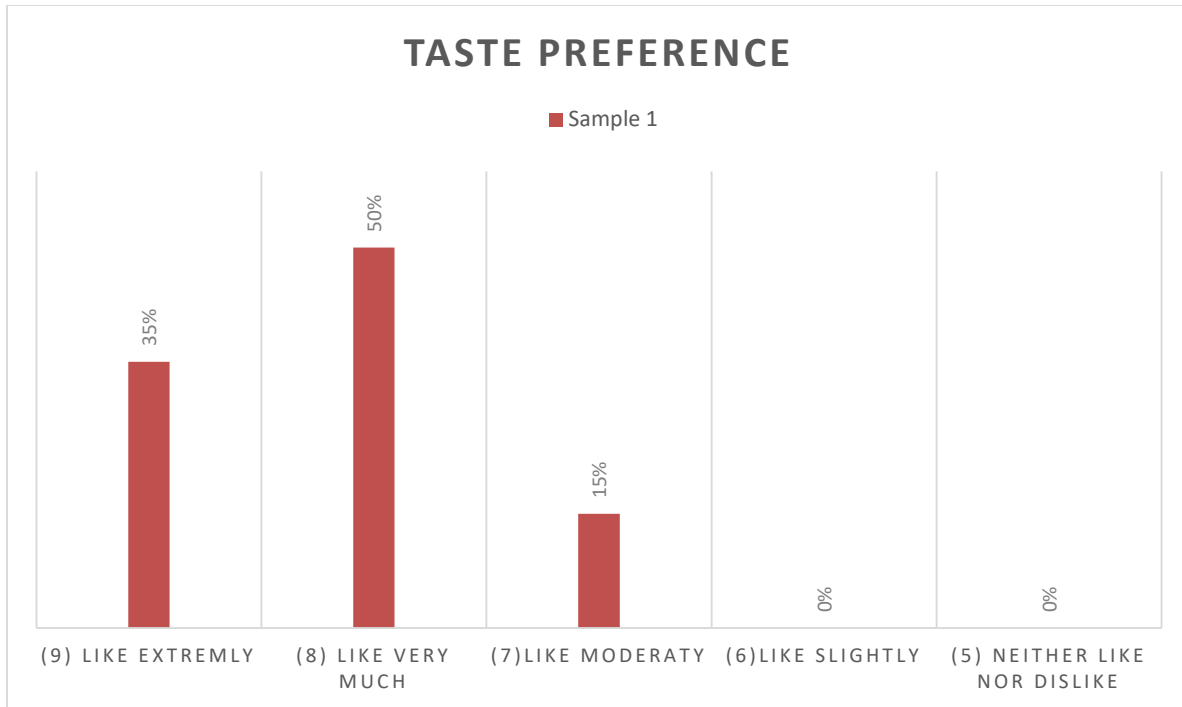


Fig 5.2.3: Bar chart of sensory evaluation - Taste Preference

Figure 5.2.3 shows the taste attributes of Oats drinks in bar charts in 9 point hedonic scales. The bars showed that Sample-1 containing 1000ml oats drinks with 5% sugar got the highest score as like extremely.

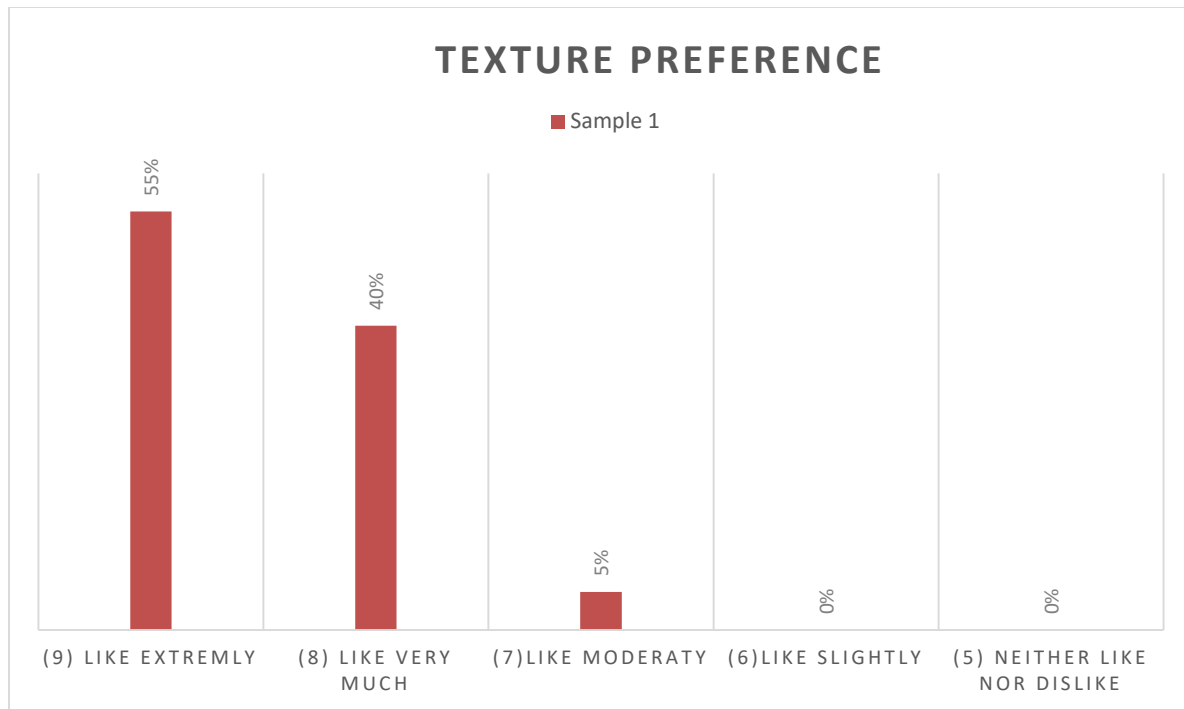


Fig 5.2.4: Bar chart of sensory evaluation - Texture Preference

Figure 5.2.4 shows the texture attributes of Oats drinks in bar charts in 9 point hedonic scales. The bars showed that Sample-1 containing 1000 ml with 5% sugar got the highest score as liked very much.

Sample

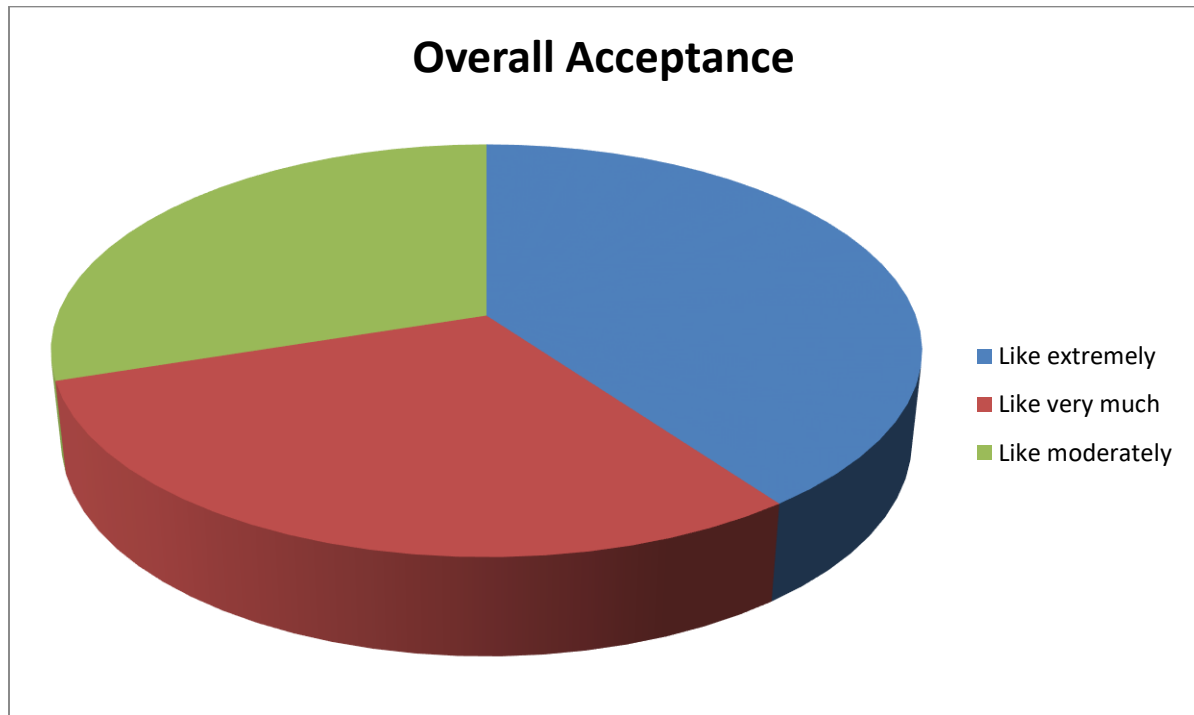


Figure 5.2.5: Pie chart – Overall Acceptance

Figure 5.2.5 shows that the overall acceptance of Oats drinks in bar charts by 9 point hedonic scales. The bars showed that Sample-1000 ml with 5% sugar got the highest percentage in overall acceptance.

Chapter 6

6.1 Conclusions

The examination on a few components influencing the acquiring of a functional oat drink built up the proper starter culture concentration, oat flour and sucrose content for finishing controlled maturation for 8 h. It was discovered that the expansion of aspartame, sodium cyclamate, saccharine and Hugo had no effect on the elements of the aging procedure and on the viability of the starter culture during item stockpiling. The chosen oat flour focus added to 0.31–0.36% beta- glucan in the beverage, which stayed unaltered both during fermentation and capacity. This would guarantee its beneficial health impact at ordinary utilization of the beverage. The rack life of the symbiotic oat drink was assessed to 21 days under refrigerated capacity..

6.2 REFERENCES

1. Wan, W. and Xu, B. (2018). Development of an orange juice beverage formulated with oat beta-glucan and whey protein isolate. *Journal of the Science of Food and Agriculture*, 98(12), pp.4685-4691.
2. Stein AJ and Rodriguez-Cerezo E (eds.), *Functional food in the European Union*, in Institute for Prospective Technological Studies, 1st edn. European Communities, Spain, pp. 5–6 (2008).
3. Tateandlyle.com. (2019). [online] Available at: <https://www.tateandlyle.com/sites/default/files/2019-04/fibres-promoat-beverage-articles.pdf> [Accessed 29 Oct. 2019].
4. Slavin, J. (2013). Fiber and Prebiotics: Mechanisms and Health Benefits. *Nutrients*, 5(4), pp.1417-1435.
5. Gray J, Armstrong G and Farley H, Opportunities and constraints in the functional food market. *Nutr Food Sci* 33:213–218 (2003).
6. *New Nutrition Business*, Nov/Dec 2014; 10 Key Trends in Food, Nutrition & Health, 2015.
7. *Euromonitor Passport; Corporate Strategies in Health and Wellness*, December 2014.