Preparation of Avocado Butter


Abstract—Fruits are very important to maintain human health due to the availability of various nutrients. Among them, Avocado (Persea Americana) is a climacteric, energetic fruit which belongs to the family of Lauraceae. But these are very perishable, which means they have a very short shelf life which leads to building a large amount of waste in the peak seasons. To reduce waste and to reduce the cost, it is important to handle the excess amount of commodities in a productive way. The preparation of products using avocado pulp is a better solution for reducing the post-harvest losses of avocado fruits. Butter, salt, cinnamon, bee honey & alpha-tocopherol are the ingredients used for this product development. All ingredients give unique characteristics to the final product. This is a good method for the preservation of avocado without waste. The shelf life of the avocado pulp is developed through this product with freezing conditions. By the combination of freezing and the addition of honey, cinnamon powder, and the portion of butter, the avocado butter can be preserved for a considerable time period. So that the excess amount of the avocado can be used for this and the wastage can be reduced. It is also a good way to export avocado to the countries which don't have this commodity.

Index Terms—Avocado, Avocado butter, Cinnamon, Bee honey, Shelf life, Freeze

1 INTRODUCTION

Avocado (Persea Americana) which belongs to the family of Lauraceae is a climacteric, energetic fruit. The nutritional value of this tropical fruit is high. Its shape is piriform with green-smooth skin. The color of the flesh is yellow and there is a medium to large seed which relatively loose within the fruit. It contains a high amount of proteins and fat-soluble vitamins which are present in deficient amounts in other fruits. (Ex-Vitamins A and B, and median levels of vitamins D and E) [1]. The oil in different levels of the avocado pulp is used for many industries — for example, pharmaceutical & cosmetics, etc.

The yield of the avocado tree is very high. After seven years of planting it produces about 138kg. This perennial plant can be grown on rough locations, not competing with the annuals adapted to flatlands [1].

It has a fast growth and development rate than other fruit species. Avocado is a seasonal fruit, so it gives a high yield in the peak season, so if it is not preserved well, it may produce a huge waste. Also, it's better to preserve it as a puree than whole fruits due to high level of ethylene production with a major change in metabolism and also higher respiratory rate after harvesting. That puree will help to produce better food products as well as extraction of oil [2].

Avocado is more susceptible to post-harvest losses due to its smooth skin. Otherwise, physical injuries can be expected during handling and transportation than rough skin fruit varieties. Mechanical damages, physiological disorders, especially chilling injury (CI), decay, and insects attract are some of the post-harvest losses in avocado. Avocado is very susceptible to chilling injuries [3]. The post-harvest losses of avocado can be decreased by producing its puree, and it can be used throughout the year. The black spots in the epidermis and discolorations in the mesocarp (black or brown) are the main symptoms of deterioration of avocado [4].

Relative to fruit mass, the pulp content in several varieties is between 52.9 and 81.3% [5]. It is considered one of the few cultured fruits presenting the lipid fraction as the major component because after removing the water of avocado pulp, high lipids and low carbohydrate levels are remained, which provides a high dry matter content to the product, which can reach up to 25% of the fruit portion [6], [7]. The avocado pulp consists of 67 to 78% moisture, 13.5 to 24% lipids, 0.8 to 4.8% carbohydrate, 1.0 to 3.0% protein, 0.8 to 1.5% ash, 1.4 to 3.0% fiber, and energy density between 140 and 228kcal [8].

Nutritional value of Avocado is very high. It is nearly four times more than other fruits but except banana, as it containing proteins (1 to 3%) and considerable amounts of fat-soluble vitamins, folic acid, and appreciable amounts of calcium, potassium, magnesium, sodium, phosphorus, sulfur and silicon, and vitamins E, B1, B2, and D [9], [10].

Avocados cannot be frozen as the whole fruit in order to extend the shelf life, but avocado puree can be frozen, but sometimes according to the duration of freezing and the method of thawing, it may be watery after thawing [11]. The best preparation when it's used in raw, but when they are cooked for long periods, their unique flavor is reduced

References

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and, on some occasions, they feel bitter [11]. Butter, salt, cinnamon, bee honey & ascorbic acid are the ingredients used for this product development. All ingredients give unique characteristics to the final product. This is a good method for preservation of avocado without waste. The shelf life of the avocado pulp is developed through this product with freezing conditions.

2 PROCESS DESCRIPTION

Well matured, healthy, uniform size over-ripened avocado was procured from the local market. Raw materials such as bee honey, cinnamon, and butter were purchased from the local market.

MATERIALS

- Avocados 160g
- Bee honey 10ml
- Cinnamon 2g
- Butter 80g
- Alpha tocopherol 1 capsule

AVOCADO PULP PREPARATION

- First of all ripened good quality avocado fruits were selected.
- Ripened fruits should have washed under running portable water. the fruit should cut and remove the seed. then avocado cream should have scraped and add portion of butter (2:1) blend it as cream.
- Then add cinnamon powder.
- Then the avocado mixture should have filled into polythene cases and wrapped well to made a log structure.
- After that take a syringe of bee honey and injecting it into the log structured avocado mixture.
- Finally, can freeze and preserve those logs for considerable time period.

Preparation of avocado butter: schematic representation of the preparation of avocado based butter is presented in Fig. 1.

3 DISCUSSION

Fig. 2 is representing the avocado butter stored in a cup. At the same time, Fig. 3 is representing the avocado butter log. Moreover, after one month, avocado butter logs are representing in the Fig. 4.
Avocado is a seasonal fruit which has a short shelf life. It has a high amount of nutritional value as well. It is a good source of HDL (high-density lipoprotein) which help to reduce bad cholesterol in the human body. It has many heat-sensitive nutrients; therefore; Application of heat is not much suitable, and it may deteriorate the organoleptic characteristics as well. So, without heat, if can preserving it is preferable. By the combination of freezing addition of honey, cinnamon powder, and vitamin E, the avocado butter can be preserved for a considerable time period. So that the excess amount of the avocado can be used for this and the wastage can be reduced. It is also a good way to export avocado to the countries which don't have this commodity. The fruits when ripe have a short life span and would discolor and rot, whether refrigerated or not, and lose its flavor [12]. But by processing puree, it can be kept for a long time under freezing conditions.

**Principal of preservation.**
- **Freezing:**

Freezing is the main principle used to preserve the avocado puree. Avocado fruits can be stored in freezing condition to extend its shelf life, but the shelf life will be extended if it is disintegrated to a puree and freeze [11]. When freezing the temperature of the product will be reduced, and it will avoid the danger zone. Microbial activities and enzymatic activities will be controlled due to the reduction of water activity, which is essential for both enzymes and microbes, and also enzymes will be denatured as they all are globular proteins. Unlike using high temperatures, freezing does not affect the organoleptic and nutritional properties unfavorably.

- **Addition of Cinnamon.**

It has anti-microbial properties against degradation done by food borne pathogens and food spoilage bacteria. In addition, it improves the sensory properties by enhancing flavor and aroma.

- **Addition of alpha tocopherol**

It is known as vitamin E, and it is a very good anti-oxidant. Addition of an anti-oxidant is important in order to reduce the oxidation. This product is rich in lipids, and it can easily be rancid, and also the color can easily change to an unpleasant brown color even though it is frozen. To reduce these drawbacks, the addition of vitamin E is important. Also, it enhances the nutritional value of the product.

**Importance of Ingredients.**

**Importance of Avocado**

Importance of Avocado is known as a good remedy for cancers, from the amount of folate in avocado it has shown promise in protecting against colon, stomach, pancreatic, and cervical cancers. Avocado is also very rich in heart-healthy monounsaturated fatty acids (Oleic acid). It helps to reduce blood sugar, weight loss, and lower the risk of many diseases because it is rich in fiber. Avocado has consisted of powerful anti-oxidants which are including lutein and zeaxanthin and vitamin E, which are very important for eye health, and it reduces the risk of macular degeneration and cataracts.

**Importance of Honey**

Honey is one of the best reducers of total and bad "LDL" cholesterol while increasing the "good" HDL cholesterol. It also has antioxidants effects which help to reduce the blood pressure. It helps to reduce cough and throat irritation. It also good for oral health and also it has anti-inflammatory effects. Honey activates the immunity system.

**Importance of Cinnamon**

Cinnamon is rich in powerful antioxidants, such as polyphenols, that helps to protect the body from oxidative damage caused by free radicals. It helps to increase the shelf life. Also, it has anti-cancer properties, anti-diabetic properties, and has properties of lowering blood pressure. Cinnamon also relieves inflammation, and it preserves brain functions as well. Cinnamon has powerful antifungal properties, and because of that, it could be effective in treating and preventing Candida. It increases the flavor while acting as a natural preservative.

**Alpha tocopherol**

Contribute to increase the shelf life by reducing enzymatic deteriorations as well it enhances the nutritional value of the product.

Nearly 240g of Avocado butter can be produced by using 160g of avocado puree as other ingredients are also added. There will be no considerable reduction in the weight as there is no heat processing. As frozen avocado puree can store for a year, we can predict that this product can also store for six months.
or more without any preservative. Also, the calorie intake will be reduced if avocado butter is used instead of normal butter because in ratio avocado butter contains nearly 65% of avocado which contains healthy fatty acids and has the low number of calories when compared with butter. So instead of having a 1 tsp of butter, it is always better to take 1 tsp of avocado butter as it only contains nearly 35% of butter.

4 Conclusion

The shelf life of Avocado can be extended by producing the avocado butter. There was no considerable change in the product even after one month without any preservative. All the added ingredients will enhance the nutritional value of the product apart of the preservative action. Nearly 240g of Avocado butter can be produced by using 160g of avocado puree. By using avocado butter instead of normal butter, the health risks will be reduced as it contains health-beneficial fatty acids, and also the calorie intake will also be reduced. So Avocado is a very good fruit for everyone, and especially it can be great for pregnant women.

REFERENCES