IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Aloe Vera Cookies as Healthy Food

Amol Abhimayu Rawool

Research Scholar

Dr. Savita Sangwan

Associate Professor

Dr. Manjusha Molwane

Co-Guide

Shri Jagdish Prasad Jhabarmal Tibrewala University, Churela

Jhunjhunu, Rajasthan, India

Abstract

One of the most popular and much sought-after culinary items worldwide is cookies. Due to the useful qualities of aloe vera gel, an attempt was made to manufacture the cookies based on this information. The study's main objective was to evaluate the nutritional and sensory qualities of cookies made with aloe vera. The sensory evaluation of biscuits containing 10%, 20%, and 30% aloe vera gel was done in order to discover the optimal formulation. Compared to the cookies with 20% and 30% aloe vera gel, those with 20% aloe vera gel were deemed to be the most widely acceptable. Due to their useful qualities, biscuits made with aloe vera may also be beneficial for the most vulnerable populations in underdeveloped nations.

Keywords: Aloe vera; Antioxidants; Mineral contents; Quality attributes; Functional food

Introduction

A well-known saying states that a healthy body also has a healthy mind. A balanced diet that contains all the necessary elements for our bodies is the best way to ensure a healthy diet and a healthy life. Essential nutrients and components are crucial for a sound and healthy life, so their significance cannot be understated. Food produced now has much less important nutrients than food produced 50 years ago, and improper agricultural techniques have, to some extent, also decreased the quality of soil for agricultural growth. Our daily need for critical nutrients has increased due to environmental stress and lifestyle demands. Research is being done to create functional foods or superfoods that, in addition to providing basic essential nutrients, improve health in order to overcome these flaws (Sharma and Dunkwal, 2012).

In Japan, the phrase "functional food" was first used in 1980 to describe food items that had special components that aided in the active growth of humans. Food that is readily available may boost the body's overall health or lower a particular disease's risk. Foods with functional properties are more and more in demand. In terms of functional food, the dairy business is significantly more developed than the baking industry globally. Customers choose food that offers nutritional and health benefits at the same time. The baking sector is still in its infancy. Yet, bakery products offer a perfect framework through which

functionality can be given to the user as a delectable snack (Siro et al., 2008). Around the world, people consider the baking industry to be a major sector of the food processing sector. Due to their accessibility and prolonged shelf life, baked goods like cookies and biscuits are very popular. Most biscuits are harmful to eat since they are high in fat and carbohydrates and low in vitamins and minerals. Adding plant extracts, fresh fruit juices, and powdered fruit, vegetable, and plant peel to biscuit batter is a new current fad.

The primary goal of such a tactic is to enhance the nutritional value of biscuits overall by including such naturally occurring vitamins, minerals, dietary fibre, or antioxidants from plant or vegetable sources (Paul and Bhattacharyya, 2015).

Aloe vera is referred to as a gift from heaven. There are more than 230 different species of aloe vera in existence worldwide. Aloe vera juice taken orally as a diet supplement has already received FDA approval. Aloe vera is also well recognised for its use in flavouring mixtures. Drinks that are beneficial to your health are made using aloe vera. Bread and biscuits are now made with aloe vera powder to boost their nutritional content. Applying a thin layer of aloe Vera gel extended the shelf life of numerous fruits and vegetables (Javed, 2014). Due to their medicinal qualities, two kinds of aloe, Aloe vera Barbadensis and Aloe vera Arborescence, have become more significant. In temperate, tropical, and subtropical regions, aloe vera is frequently grown. Aloe vera plant inner gel has numerous biological qualities and contains over 200 bioactive substances (Radha and Laxmipriya, 2015). Aloe vera has long been used as a significant functional food source in juices to support human health. When products are kept in storage for a long time, aloe vera also prevents the growth of bacteria (Javed, 2014).

Aloe vera can easily survive in times of extreme drought. Aloe vera is well known for being a valuable food source and is simple to grow even in severe drought. The bulk of these vitamins also have significant antioxidant potential, and aloe vera gel also contains vitamin B1, carotenoids, vitamin B2, vitamin B6, niacin, and folic acid (Rodrguez et al., 2010). Aloe vera gel contains excessive amounts of vitamin C. Minerals are also present in aloe vera, albeit it has a higher concentration of potassium and chloride than other plants do. In addition to these minerals, aloe vera also contains magnesium, copper, zinc, chromium, iron, and calcium. Sodium (Na) is considerably less abundant in aloe vera (Javed, 2014).

The main idea behind functional food is to use broad nutritional knowledge to enhance end-user health at the food product level. The most popular and widely consumed pastry item worldwide is biscuits. Unfortunately, it contains little fibre, vitamins, or minerals and is heavy in fat, sugar, and carbs. In addition to being convenient to handle and a widely recognised snack, biscuits have a longer shelf life. Many scone kinds are regarded as a valuable dietary source for enhancing nutrients and fortification (Karklina et al., 2012). Refined wheat flour was the starting point for this study's addition of aloe vera juice, sugar, butter, sodium bicarbonate, and salt to boost the nutritional content of biscuits. The study's focus then was on the product's overall nutritional enhancement.

Research Method and Data Collection

Raw Material Used for Study

In order to create a functional food product, this research-based study was carried out to ascertain the product's nutritional properties, antioxidant activity, and general appeal. The Mumbai local market was used to get the basic materials. The research work was done in Patkar Varde College, Goregaon, Mumbai, India.

Sample Method

The main component used was wheat flour. In T0, T1, T2, and T3 the aloe vera pulp was mixed with wheat flour at a rate of 0%, 10%, 20%, and 30%. In each treatment, the same amount of 5% sugar and butter was used. The same 1% concentration of baking soda and table salt was also used. Table I contains the dough's composition. The dough mixing machine received the 58% wheat flour together with the butter and sugar. With the use of a cutter and moulds, the scone mix dough was sheeted and cut into biscuits. The biscuits were prepared for more work. In the lab-scale baking oven, scone baking was carried out. The baking

took place in a baking oven for 12 to 15 minutes at 170 C. Biscuits were placed in airtight zip bags after baking in preparation for further investigation.

Sample Evaluation (Moisture, Ash, Crude Protein, Crude Fat, Crude Fiber, Carbohydrates, Vitamin C, Carotenoids, and Minerals)

Aloe vera liquid, wheat flour, and the final aloe vera biscuits were measured for moisture content and ash in accordance with AACC (2000). According to AACC, the crude protein of wheat flour, aloe vera juice, and the final aloe vera biscuits was determined (2000). The food samples were broken down, neutralised, and finished off by distillation. Aloe vera juice, wheat flour, and the finished aloe vera biscuits' crude fat were measured using the Soxhlet apparatus in accordance with AACC (2000). According to the AACC method, the amounts of crude fibre, carbs, and vitamin C in wheat flour, aloe vera juice, and the final product aloe vera biscuits were measured (2000). UV/vis Spectrophotometer was used to determine the amount of carotenoids (Devi et al., 2018). The minerals (Na, K, and Ca) are identified using a flame photometer in accordance with (AOAC, 2012).

Table 1 – Ingredients and dough composition, expressed as a percentage

Ingredients	Biscuits without any Coating (T_0)	Biscuits with 10% Aloe vera (T_1)	Biscuits with 20% Aloe vera (T_2)	Biscuits with 30% Aloe vera (T_3)
Wheat Flour (g)	58	58	58	58
Aloe Vera (g)	0	10	20	30
Butter (g)	5	5	5	5
Sugar (g)	5	5	5	5
Salt (g)	1	1	1	1
Baking Soda (g)	1	1	1	1
Water (ml)	30	20	10	0

Table 2 - The average nutritional values of aloe vera biscuits

Samples	Moisture	ASH	Crude Protein	Crude Fiber	Crude Fat	Carbohyd.	Vit.C	Beta-Carotene
T_0	5.223	0.176	8.443	0.230	8.510	76.707	77.767	14.330
T_1	6.033	0.356	9.336	0.306	8.500	74.437	80.133	41.133
T_2	7.166	1.466	9.360	0.373	8.446	73.220	91.900	63.067
T_3	8.200	1.516	9.343	0.440	8.430	72.033	121.67	80.167

T_0 represents biscuits without any coating T_1 represents biscuits with 10% aloe vera
T_2 represents biscuits with 20% aloe vera T_3 represents biscuits with 30% aloe vera

Results and Discussions

Wheat flour and aloe vera gel had moisture contents (MC) of 11.85% and 98.6%, respectively. Wheat flour's moisture level was below the acceptable range. The moisture content of the aloe vera biscuits was dramatically raised. Both the treated samples and the control samples showed varying moisture contents. The moisture content of the control sample was lower than that of the treated sample, which had a higher moisture content than the control sample. They might be brought on by the addition of aloe vera, which has a high water-binding capacity and is rich in water. Wheat flour and aloe vera gel had ash contents (AC) of 0.9 and 0.19 percent, respectively.

The aloe vera biscuits' ash content was very important. Ash content varied between the control sample and the ones that had been treated. Ash content in the control sample was lower. Aloe vera gel also caused the treated biscuits' ash level to be greater. They could be brought on by the inclusion of aloe vera, which has many minerals that aid in raising the amount of ash present.

Both wheat flour and aloe vera gel had protein contents (PC) of 10.840.2% and 0.120.01%, respectively. Wheat flour's protein content was lower but still adequate for making biscuits. The aloe vera biscuits have a considerable amount of protein. Both the treated samples and the control samples showed different protein contents. The protein content of the control sample was lower. The protein content of biscuits that had been treated was also increased in T1, T2, and T3, respectively.

Wheat flour had a crude fibre content (CFC) of 0.8% while aloe vera gel had a CFC of 0.16. The Aloe Vera biscuits have a sizable amount of crude fibre. The control sample and those that had been treated both had varying amounts of crude fibre. The amount of crude fibre in the control sample was lower. In addition, T3 treated biscuits had a larger crude fibre content than the others.

Both wheat flour and aloe vera gel had crude fat contents (CFC) of 1.2 and 0.08, respectively. The aloe vera biscuits' crude fat content was insignificant. Both the treated and control samples showed variations in crude fat content. The crude fat level of the treated biscuits was lower than that of the control sample, whereas it was higher in the control sample. The recipe included butter, which caused the crude fat in the controlled sample to increase, but aloe vera treatment changed the fat content of the biscuits.

Wheat flour and aloe vera gel both had carbohydrate contents (CC) of 0.77 and 0.1%, respectively. The aloe vera biscuits have a sizable amount of carbohydrates. The control sample and the treated ones both had varying carbohydrate contents. The control sample had a lot of carbohydrates. The treated biscuits' carbohydrate content was also lower than that of the control sample.

The amount of Vitamin C (ascorbic acid) in aloe vera biscuits was examined and shown to rise with aloe vera gel concentration. The aloe vera biscuits' vitamin C content was very important. The antioxidant content of the treated biscuits T1, T2, and T3 was 80.133 mg/100g, 91.900 mg/100g, and 121.67 mg/100g, respectively, compared to a lower antioxidant content in the control sample. The concentration of aloe vera gel rose with the analysis of the -carotene aloe vera biscuits.

The aloe vera biscuits' -carotene content was very important. The amount of beta-carotene in the control sample was lower, whereas the amounts in the treated biscuits T1, T2, and T3 were 34.44.133 g/g, 63.067 g/g, and 80.167 g/g, respectively. Table II lists the average aloe vera scone ingredients.

As seen in Figure 1, aloe vera biscuits were made with 10%, 20%, and 30% juice. The panellist thought sample T2 was generally acceptable. Compared to 10% T1 and 30% T3, the therapy administered to the biscuits produced substantial results at a 20% aloe vera concentration. The findings demonstrated that adding aloe vera gel to biscuits had a significant positive impact on both the baked biscuit's quality and the overall nutritional profile of the biscuit.

Conclusion

In addition to enhancing flavour, aloe vera gel-based biscuits have health advantages. In order to give consumers far more value-added products, it is advised that aloe vera gel be used in the baking business. A superb baked good is produced by adding aloe vera in the range of 10% to 20%. The highest rating for texture, colour, and general appeal went to biscuits made with 20% aloe vera gel. It might be suggested to the general public that including food products made from aloe vera in their daily diet meal plan may help control ailments that are related to health.

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