

Development of Eggless Chia Seeds Biscuits

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Abstract—Seeds from *Salvia Hispanica L.* or more commonly known as CHIA, are a traditional food in central and Southern America. Chia seeds contain proteins, dietary fibres, vitamins and minerals (calcium, magnesium, iron and zinc) phenolic compounds and high amounts of antioxidants. Chia seeds are rich source of rich plant source omega-3 fatty acids. The soluble portion forms a gel like substance and the insoluble portion gives an effect of fullness. Chia seeds inhibit growth of cancer cells without harming healthy cells. Chia seeds or oil can be used to enhance omega-3 fatty acid and fiber content in many bakery products. As compared to other functional foods chia seeds offer great potential in various industries-health, food, animal feed, pharmaceuticals.

1. INTRODUCTION

Salvia Hispanica L. (Chia) is an annual herb that is a part of family Lamiaceae (or Labiatae) Kingdom Plantae (Ricardo and Wayne 2009, Maria et al. 2014). Chia seeds have been originated from Central America and utilized as staple food in ancient Aztec diet. Chia seeds are gaining importance in the present days due to their nutritional and medicinal properties. They are commonly enlisted under 'super food'. Chia seed and/or oil can be used to enhance omega 3 fatty acid content in many food products. Considering the powerful impact of super food seeds on health and well being and current market trends towards functional foods. The need and importance of products made from chia seeds has enhanced. Chia seeds neutral taste and crunchy texture makes them an ideal for developing innovative recipes for providing physiological benefits, reduce chronic diseases and promoting health. The gel forming property of chia seeds has widened its application in food industry as a gel former, thickener and chelator. Because of its high hydration capacity it develops high viscosity, can be used as a fat replacer especially in bakery products. Apart from this, as chia seeds are rich in fibers these can be used as a functional food to enhance the nutritive value of bakery products. Hence, the present study is planned to include chia seeds as egg replacer to make chia and oat biscuits.

2. MATERIALS AND METHODS

Chia biscuits were made with oats. Following steps were followed for developing Chia oats Biscuits.

1 Raw material procurement

2. Preparation of Chia Biscuits :

Creaming (Fat and Sugar)- Addition of Ingredients- Mixing - Kneading - Rolling and Cutting-Tray Greasing -Baking (at 150C for 20 min) – Cooling -Packaging -Storage

For the development of chia biscuits following ingredients and formulation was used:

Ingredients & Amount	Ingredients & Amount
Flour- 60g	White Sugar- 55g
Rolled oats- 40g	Butter - 50g
Chia seeds- 10g	Vanilla essence- 8-10drops
Corn Starch - 15g	Milk- Used only for brushing
Baking powder- 1tsp	

3 Sensory analysis, texture, dimensions and shelf life analysis was done.

3. RESULT

Result of sensory analysis, texture and dimensions were recorded.

3.1 Sensory Analysis: Sensory Analysis of developed biscuits was done after 24hrs by trained panellist on 9 point hedonic scale. Total possible score for the evaluation was Maximum 50. The chia biscuit overall acceptability was 32 out of total score of 50.

3.2 Texture: The trial biscuits have a nutty flavour of chia seeds and it also had crunchiness and texture is buttery.

3.3 Dimensions:

Av. Weight (g)		Av. Dimensions (mm)		Av. Thickness (mm)	
Before baking	After baking	Before baking	After baking	Before baking	After baking
11.2	8.4	34.547	42.566	5.526	9.184

3.4 Storage Quality Evaluation:

Shelf life score of enriched biscuits was still better than control biscuits due to better aroma retention and texture. Packaging and good hygiene may be responsible.

4. CONCLUSION

With increasing public health awareness worldwide, demand for functional food with multiple health benefits has also increased. Chia seeds and oats biscuits are perfect to fill the need. Apart from its fatty acid content and protein content, and due to its other properties like hydration capacity, gel forming capacity, high mineral (calcium, magnesium and iron), higher dietary fiber and antioxidant content, chia seeds biscuits can be used as a functional food. Although, the potency of this medicinal oil seed or natural product need to be validated by more scientific research.

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