

Development and Sensory Evaluation of Sunflower Seed Fortified Cookies



Home Science

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ABSTRACT

The present study was conducted to prepare the sunflower seed fortified cookies as influenced by different levels of sunflower seed powder. Sunflower seed fortified cookies were prepared by fortifying sunflower seed powder in different levels to the cookies flour, whereas cookies prepared out of without adding sunflower seed powder were kept as control. Among the different treatments 20 per cent sunflower seed powder recorded highest scores for organoleptic parameters like colour and appearance, flavour, crispness, taste and overall acceptability even upto 30 days of storage.

INTRODUCTION

The foundation of health is vitality and that is something that no medical checkup can reveal. Health is not a virtue signifying absence of disease. It is something positive, implying an abundance of vitality, vigour and youthfulness. Physical stamina, mental alertness and clarity and spiritual poise are the blessings of good health (Renu Mahtani, 2005). A better knowledge of nutrition, have increased life expectancy with consequent increase in degenerative arterial disease and coronary heart disease. "We are living too short and dying too long"- Dr. Aiyron Wentz.

Nutrition scientists are realizing that all should pay more attention to their daily intake of complex plant foods like seeds, nuts and whole grains. A move towards whole foods, like sunflower seeds, will add nutrients to the diet in a flash. Mother Nature has created a nutritional power pack that is hard to beat in sunflower seeds. Healthy unsaturated fats, protein and fiber, plus important nutrients like vitamin E, selenium, copper, zinc, folate, iron and phytochemicals come wrapped up in this small and perhaps unsuspected package – a sunflower seed. Just one ounce of these seeds every day can improve the nutritional quality of the diet (Holliday, 2001).

The sunflower is an annual plant native to the Americas in the family Asteraceae. Per 100 g the seed is made-up to enclose protein 20.78 g, total lipid (fat) 51.46 g, ash 3.02 g, carbohydrate 20 g and fiber 8.6 g with total energy of 2445 kj (USDA, 2008). It has also been investigated that some elements can decrease the risk of some types of cancer, e.g., selenium. USDA (2008) provided the composition for mineral contents in sunflower seeds as per 100 g seeds containing calcium 78 mg, iron 5.25 mg, magnesium 325 mg, phosphorus 660 mg, potassium 645 mg, sodium 9 mg, zinc 5 mg, copper mg, manganese 1.95 mg and selenium 53.0 mcg. This oxidative damage in human body is involved in the onset of large number of diseases such as auto-immune diseases, inflammation, cardiovascular-neurological diseases, cancer and aging (Kregel and Zhang, 2006). An adequate intake of natural antioxidants could protect the onset of oxidative damage in cells (Ozsoy et al., 2008).

Sunflower polyphenols such as caffeic, chlorogenic and ferulic acids exert a high antioxidative potential, which might be beneficial both from a techno functional and biofunctional point of view (Maier et al., 2009). The presence of chlorogenic acid as a major polyphenol in sunflower seeds has been well recognized (Smith and Johnsen, 1948; Joubert, 1955; Sechet et al., 1959; Milic et al., 1968). Caffeic acid and quinic acid are also present in sunflower seeds. These cause discoloration of sunflower proteins at alkaline pH and also lower the nutritive value (Horigome and Kandatsu 1968; Jung and Fahey, 1981) because of their interaction with residues such as lysine, cysteine, methionine (Pierpoint, 1970), alanine, phenylalanine and glutamic acid (Nakatani and Kurasawa, 1979).

The utilization of sunflower seeds in bakery products and in ready to cook products as the supplementation vehicle for different nutrients is progressing day by day. The bakery products in particular bread and cookies are used as main supplementation vehicle for nutrition purposes. Bread and cookies prepared from refined flour is nutritionally much poorer and does not adequately meet the requirements for many macro- or micro-nutrients. Also, wheat protein lacks the balance of essential amino acids- lysine, threonine and valine. Therefore, there have been many on-going investigations on enhancing the nutritive value of bakery products to fulfill the expanding demands of modern dietary habits, considering the products protein, mineral, vitamins and/or fiber contents.

MATERIALS AND METHODS

Sunflower seeds (Whole Sunflower seeds) were cleaned and dried for 10 hours and ground into powdered form, grounded sunflower seed powder were used for fortification in the cookies flour. The treatments for preparation of sunflower seed fortified cookies were as follows.

Treatment details

T1 – Cookies flour (Control)

T2 – Cookies flour + 10% sunflower seed powder

T3 - Cookies flour + 20% sunflower seed powder

T4 - Cookies flour + 30% sunflower seed powder.

The sunflower seed fortified cookies were prepared by mixing the cookies flour with specified amount of sunflower seed powder as mentioned treatments. All the ingredients such as butter, granulated sugar, water, whole egg, maida, baking powder, vanilla essence and salt were used. Butter and granulated sugar were mixed together in a planetary mixture for creaming of 15 to 20 minutes, and then water and whole egg were added. Weigh and sieve the maida flour, baking powder, vanilla essence, salt and sunflower seed powder were added together in desired quantities and baked to a temperature of 180^oC for 15 to 20 minutes.

Organoleptic evaluation of sunflower seed cookies were carried out by a panel 15 semi-trained judges including staffs and post graduate students of Mother Teresa Women's University, Kodaikanal. The organoleptic characters viz., colour and appearance, texture, taste and overall acceptability of sunflower seed incorporated cookies were evaluated on five point hedonic scale (Ranganna, 1986). The mean score given by fifteen judges were used for statistical analysis

RESULTS AND DISCUSSION

The data pertaining to the organoleptic evaluation of sunflower seed fortified cookies was influenced by different treatments were presented in Table 1.

The data on texture reveals that there were significant differences among the treatments. Significantly higher score for texture was recorded in cookie flour along with fortification with 20 per cent sunflower seed powder (4.10), which was on par with cookie flour along with fortification with 10 per cent sunflower seed (3.80) whereas lowest score were recorded in 30 per cent sunflower seed (3.50). Significantly higher score for taste was recorded in cookie flour along with fortification with 20 per cent sunflower seed (4.20), which was on par with control (4.0) whereas lowest score were recorded in 30 per cent incorporation (3.70). The data on overall acceptability of sunflower seed fortified cookies revealed that there were significant differences among the treatments. Significantly higher score for overall acceptability was recorded in cookie flour along with fortification with 20 per cent sunflower seed (4.0), which were on par with control (3.9) lowest score were recorded in 30 per cent incorporation (3.6).

CONCLUSION

Sunflower seed cookies and other ready to eat products can also be introduced in school feeding programmes to provide more nutritious meals. Early dietary intervention is absolutely essential to have proper weight gain, healthy bones and teeth for which the right choice of food plays a vital role. The incorporation of sunflower seeds in the preparation of cookie will indirectly improve the protein and vitamin- E intake of its consumers. The product has excellent market potential since it contain low carbohydrate, high protein, and sufficient amount of fiber, vitamin and mineral content.

Table 1: Organoleptic evaluation of sunflower seed fortified cookies for colour and appearance, taste, texture and overall acceptability (Scores out of 5)

Treatments	Colour and Appearance	Taste	Texture	Overall acceptability
T1 – Cookies flour (Control)	4.50	4.0	3.6	3.9
T2 – Cookies flour + 10% sunflower seed powder	3.70	3.9	3.8	3.7
T3 - Cookies flour + 20% sunflower seed powder	3.80	4.20	4.10	4.0
T4 - Cookies flour + 30% sunflower seed powder.	3.20	3.70	3.5	3.6
Mean	3.80	3.95	3.75	3.80
S.E.m± CD @1%	0.12 0.56	0.12 0.54	0.12 0.55	0.12 0.54

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