

Making of Nut Spread from Sesame Seeds, Walnuts and Pistachios.

Dhilipkumar.M*, Vasanth Anbumani.P , Vidhya.D , Abarna Kartheeswari.V, ,Soundhara Pandiyan.R.

Department of Food technology,

JCT college of engineering and technology, Coimbatore, Tamilnadu.

ABSTRACT

Nut spread is an spreadable food stuff made by grinding nuts into a fine paste. Soft nut spread have a soft and creamy consistency, easier to spread and suitable for cooking, baking or making smoothies. Additives are added to some nut spread to improve their taste, effect, consistency or increase shelf life. White Sesame seed (*Sesamum indicum* L.) is one of the most ancient cultivated oil seed crops all over the world which belongs to the family Pedaliaceae. These seeds contains sesamol and sesamin components that may help lower cholesterol levels and improve heart health. These components are a good source of Omega-6, vitamin E and monosaturated fats that prevent skin elasticity. Sesame butter is also known as Tagini. Walnut (*Juglans regia*) is a good source of fats, proteins and fiber. It belongs to the family Juglandaceae. These components have potential health effects against cancers, inflammations and neurological illness. It contains single and multiple unsaturated fatty that affect the heart health. Pistachio (*Pistachio vera*) is a nut produced by 20 species of shrub such as *Pistaciavera*, *Pistacia Atlantica*, *Pistaciaterebinthus*, *Pistacialensticus* and *Pistaciakhinjuk* that belongs to the family Anacardium. It is an important source of energy and many nutrients, minerals, antioxidants and vitamins that are essential for human health. The present study was carried out with the objective to prepare nut spread by incorporating white sesame seeds, walnuts and Pistachios and to access the acceptability and nutritive value of products prepared. It shows a positive result in terms of nutrient content, color, taste and appearance and shows considerable change in physiochemical properties.

Keywords: Sesame seeds , Walnuts , Pistachios , Nut , Mix.

1. Introduction

Nut spread is a spreadable food stuff made by grinding nuts into a fine paste. Soft nut spread have a soft and creamy consistency, easier to spread and suitable for cooking, baking or making smoothies. Additives are added to some nut spread to improve their taste, effect, consistency or increase shelf life [1]. The objective of study was conducted to improve the nutritional property of nut spread by incorporating White sesame seeds, walnuts and pistachios. Sesame seeds (*Sesamum indicum* L.) is one of the most ancient cultivated oil seed crops all over the world. Sesame seeds protect our body from free radicals and cure cancer [2]. These seeds contain sesamol and sesamin components that may help lower cholesterol levels and improve heart health. It is a short duration crop and fits well in a number of multiple cropping system either as a sequence crop or a cash crop. These components are a good source of Omega-6, Vitamin E and monosaturated fats that prevent skin elasticity. Sesame butter is also known as Tagini [3]. Walnut (*Juglans regia*) is a good source of fats, proteins and fiber. It belongs to the family Juglandaceae. The botanical structure of walnut is compared with human brain, so it is considered as a brain nutrient. These components have potential health effects against cancer, infections and neurological illness [4]. It contains important vitamin structures such as niacin, riboflavin, thiamine and pantothenic acid. It contains single and multi unsaturated fat that affect the heart health. These are most often eaten on their own as a snack but can also added to ice-creams, salads, soups and baked goods. Pistachio (*Pistachia Vera*) is a nut produced by 20 species of shrub such as *Pistaciavera*, *Pistacia Atlantica*, *Pistaciaterebinthus*, *Pistacialensticus* and *Pistaciakhinjuk* that belongs to the family Anacardiaceae. It have a beneficial effects on weight and lowering hypertension [5]. It is an important source of energy and many nutrients,

* Corresponding author.

E-mail address: dhilipkumarm2001@gmail.com

minerals, antioxidants and vitamins that are essential for human health. The main purpose of study is to develop value added nut spread by incorporating white Sesame seeds, walnuts and pistachios. This combination of ingredients that increase the nutritional value of nut spread. So we justify that our product is helpful for health beneficial.

A. Nutritional benefits of White Sesame seeds.



Figure 1 : White sesame seeds

- * It helps in digestion stimulates blood circulation and benefits the nervous system.
- * These are the best source of calcium that contains fat more calcium than dairy.
- * Dry roasted white Sesame seeds are ground with olive into a thin, light browned color paste , known as Tagini.
- * White sesame seeds have higher iron content than the black ones and are mostly used as ingredient in foods[6]
- * It contains Mg and other nutrients that have been shown to combat diseases.

B. Nutritional benefits of Walnuts



Figure 2 : Walnuts

- * It provides healthy fats, fibres , vitamins and minerals.
- * These are significantly higher in Omega-3 fat than any other nut. Omega-3 fat from walnut is called Alpha linolenic acid (ALA)

*These nuts are easily incorporated in our diet, as they can be eaten on their own or added to many foods

C. Nutritional benefits of Pistachios:



Figure 3: Pistachio

- * It contains healthy fats and are a good source of protein, fiber and antioxidants.
- * They boost several important nutrients including Vitamin B6 and potassium
- * They are high in lutein and Zeaxanthin, both of which promote eye health[7].

D. Nutritional content:

Table1 : Nutritional content of White sesame, walnuts and pistachios (per 100g).[8],[9],[10].

Nutrients	White sesame	Walnut	Pistachio
Carbohydrates(g)	24.11	13.77	28.2
Energy (g)	585Kcal	653 KCal	555KCal
Proteins (g)	18.82	15.21	20.8
Total fats(g)	51.02	65.2	43.3
Dietry fibers(g)	5.9	6.7	10.6

2. Methods and Methodology

White Sesame seeds, Walnuts and pistachios were purchased from market in Coimbatore. 500g of nut spread could contains 430 -450 walnuts, 430-450 pistachios and 100-150 grams of White sesame seeds. Other ingredients such as Salt(1.7%), hydrogenated vegetable oil(0.122%), dextrose(1.9%) and corn syrup (2%) are added to the product to improve smoothness, spreadability and flavour.

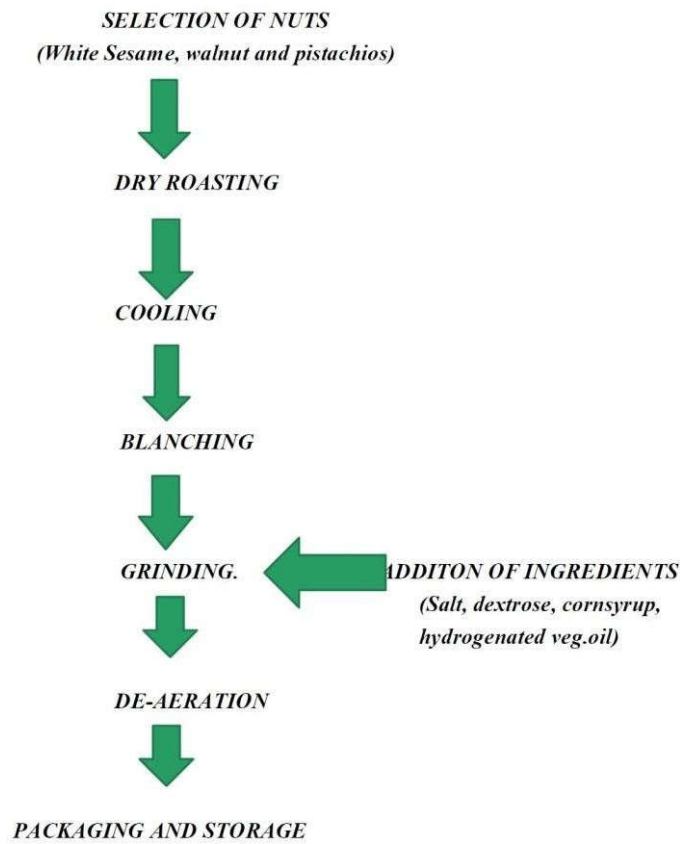


Figure 4 : Flow chart for making nut spread

Selection of nuts :



The above shown nuts are used in making nut spread. They are good health benefits for both adults and children[11].

Dry roasting

These nuts are roasted at 180-200°C for 25-30 minutes either on trays in oven, the nuts being turned by hand from time to time or by use of nut roasting equipment.



Figure 5: Hot air oven



Figure 6: Nut roasting equipment

Raw nuts contains lipoxxygenase, which accelerate the oxidation of damaged nuts. The lipoxxygenase is usually destroyed during nut roasting, but after roasting, non-enzymatic catalysts can initiate oxidation. During this method, moisture content of nuts were reduced, browning reactions and caramelization occurs and brown pigments are formed.

Cooling

These nuts have to be rapidly cooled and this helps them to retain moisture and oil, preventing them from drying out.

Blanching

In this process, the remaining outer skin of the nuts has been removed and white coloured nuts were obtained.

Grinding

After blanching, a grinder grinds the nut into a paste. As the nuts are being fed into the grinder, about 1.7% of salt, 0.122% of hydrogenated vegetable oil, 1.9% of dextrose and 2% of corn syrup are added into the mixture.



Figure 7: Dextrose.



Figure 8: Hydrogenated vegetable oil



Figure 9: Corn syrup



Figure 10: Salt

Hydrogenated vegetable oil acts as a stabilizer, which prevents the oil from collecting at the top of the jar [12]. Throughout the grinding process, peanuts are kept under constant pressure to prevent formulation of air bubbles, which could cause oxidation.



Figure 11: Grinded nut spread

De-aeration

Vacuum kettle is used in this process to removes the air.

Packaging

After grinding, the prepared nut spread is put into a final containers, it is allowed to remain undisturbed until it is completely crystallized [13].



Figure 12: Packaging glass bottles



Figure 13: Prepared nut spread



Figure 14: Prepared product

Bottles are then sealed, placed in cartons and allowed to set at 20°C for 35 -40 hrs before distribution

3. Conclusion

In the world , many people are affected by heart diseases like myocardial infarction, coronary artery disease, arrhythmia and heart failure. Here it proves to be the best product for heart patients where it does not need more cost, in which the people can use it in their daily life..

REFERENCES

- [1].Gorrepati, Kalyani & Balasubramanian, S. & Chandra, Pitam. (2015). Plant based butters. *Journal of food science and technology*. 52. 3965-76. 10.1007/s13197-014-1572-7.
- [2].Ullah, Najeeb & Mirza, M.Y. & Khan, Mubashir & Zhou, Weijun. (2012). Sesame. *Technological Innovations in Major World Oil Crops*. 1. 131 -145. 10.1007/978-1-4614-0356-2_5.
- [3]. Conway, & Singer, & Tagini, Angela. (2004). Conway, M. A., Singer, J. A., & Tagini, A. (2004). The self and autobiographical memory: Correspondence and coherence. *Social Cognition*, 22, 495–537.. *Social Cognition*.
- [4]. Hayes, David & Angove, Michael & Tucci, Joe & Dennis, Christina. (2015). Walnuts (*Juglans regia*) Chemical Composition and Research in Human Health. *Critical reviews in food science and nutrition*. 56. 10.1080/10408398.2012.760516.
- [5]. Parizi, Ghaseminasab & Mazloomi, Seyed Mohammad. (2016). A review on pistachio: Its composition and benefits regarding the prevention or treatment of diseases.
- [6]. Kanu, Philip. (2011). Biochemical Analysis of Black and White Sesame Seeds from China. *American Journal of Biochemistry and Molecular Biology*. 1. 145-157. 10.3923/ajbmb.2011.145.157.
- [7]. Eisenhauer, Bronwyn & Natoli, Sharon & Liew, Gerald & Flood, Vicki. (2017). Lutein and Zeaxanthin—Food Sources, Bioavailability and Dietary Variety in Age-Related Macular Degeneration Protection. *Nutrients*. 9. 120. 10.3390/nu9020120.
- [8]. Pal, Ajay & Khanum, Farhath & Bawa, Amarinder. (2010). Nutritional, Medicinal and Industrial Uses of Sesame (*Sesamum indicum* L.) Seeds - An Overview. *Agriculturae Conspectus Scientificus (ACS) (acs@agr.hr)*; Vol.75 No.4. 75.
- [9].Şen, Mehmet & Karadeniz, Turan. (2015). The nutritional value of walnut. *Journal of Hygienic Engineering and Design*. 11. 68.
- [10]. Dreher PhD, Mark. (2012). Pistachio nuts: Composition and potential health benefits. *Nutrition reviews*. 70. 234 -40. 10.1111/j.1753-4887.2011.00467.x.
- [11]. Zhou, Donghao & Yu, Haibing & He, Fang & Reilly, Kathleen & Zhang, Jingling & Li, Shuangshuang & Zhang, Tao & Wang, Baozhen & Ding, Yuanlin & Xi, Bo. (2014). Nut consumption in relation to cardiovascular disease risk and type 2 diabetes: A systematic review and meta-analysis of prospective studies. *The American journal of clinical nutrition*. 100. 10.3945/ajcn.113.079152.
- [12]. REDDY, S. & NALINAKSHI, M & Chetana, Ramakrishna. (2007). Fully hydrogenated vegetable oil as a stabilizer for low fat butter spreads. *Journal of Food Lipids*. 6. 245 - 259. 10.1111/j.1745-4522.1999.tb00147.x.
- [13]. Bello, Florence & Etim, Uwakmfon & Nwabueze, Titus. (2019). Performance Evaluation of Selected Packaging Materials on the Chemical Compositions and Consumer Acceptability of Roasted Groundnut Seeds Stored at Ambient Temperature. *Advances in Food Science and Engineering*. 3. 10.22606/afse.2019.34002.