An Assessment of Organoleptic Properties of Soybean Milk and Produced by Three Different Method

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ABSTRACT
This study evaluated the sensory characteristics and acceptability of soymilk produced using three extraction methods: hot extraction, soaking before hot extraction, and cold extraction. In the first week, soymilk made with hot extraction recorded the highest scores in taste (7.67) and flavor (7.73), while soaking before hot extraction yielded the best color (8.07) and overall acceptability (7.93). Cold extraction had the lowest scores for flavor (6.00) and overall acceptability (7.40). During the second week, hot extraction again produced the highest ratings for taste (8.25), flavor (7.25), and overall acceptability (8.63), whereas cold extraction showed the best color score (8.38) but the lowest flavor rating (5.75). In the third week, soaking before hot extraction achieved the highest color (8.43) and overall acceptability (7.57). Generally, soymilk produced by cold extraction and soaking before hot extraction met the recommended sensory and nutritional standards set by the World Health Organization (WHO) and the Standards Organisation of Nigeria (SON). The findings confirm that soymilk is a nutritious, acceptable, and affordable alternative source of protein, suitable for both children and adults.

Keywords: *Soymilk, sensory evaluation, acceptability, nutritional value, extraction methods..*

INTRODUCTION

Soy is a key source of food, useful both its protein and oil content. Soybeans is a species of legume native to east Asia, widely grown for its edible bean. (Muller,2018) soymilk and are so nutritious that the latest dietary for human health and its was acts as a cheaper alternative to proving protein-energy (Dashiell et al.,). Soymilk in the traditional sense is simply an aqueous extract of whole soybean. Soymilk according to the nutritionist a possible substitute for cow or human milk particularly in the feeding of infant who are allergic to animal milk or where cow milk may be found to be too expensive or unavailable. Probably most important is the low iron content of cow's milk. It makes it difficult for the infant to obtain the amounts of iron needed for growth (Kelleher Lonnerdal 2016). Is a plant – based non-dairy beverage, often consumed as an alternative to milk. It's made from soybeans, and many brands fortify their soymilk with vitamin and mineral such as vitamin D and calcium. (J. Wilson, 2019). Soymilk is well known dairy milk replacement but it's not just a substitute ingredient soymilk can be a worthwhile addition to your diet on its own. This heavy, flavourful beverage first came about as a waste product on the way to making of today soymilk can be found around the country as a lactose free dairy substitute with health benefits that are all its own. Soymilk are plant – based milk made from soybeans that are soaked, ground with water and filtered (Fomon et al., 2010). Soymilk is a suitable alternative for children who cannot tolerate milk from animal or cows. (Adjebeng and S Osho, 2012). It contains approximately the same amount of protein as cow milk it contains no cholesterol and little saturated fat and it does not contain lactose so it can also be used as an alternative food source for lactose intolerant infants. (Baker Et al,.2014).

MATERIALS AND METHODS

This work determined the effects of different methods used in the processing of soybeans into soymilk on the quality of the milk produced during processing and storage, material was used: beaker, Kenwood Blender, distilled water, filter paper/funnel, separating funnel, Soxhlet apparatus, Laboratory refrigerator, stirrer, sample bottle, timer (stop watch) measuring cylinder. (Glycine max,2012)

Sample Collection

Soybean use for this work were purchased from central market in Geidam, Yobe State, Nigeria.

Soymilk production

This work determined the effects of different methods used in the processing of soybeans into soymilk on the quality of the milk produced during processing and storage, these methods are **Hot Extraction** The sample were blanched in hot water for 30minutes and were remove and milled with water using the Kenwood blender, (Molgaard C, et al., 2013). **Cold Method** This process was carried out in order to prevent change of the beans and growth of microbes and removed by adding water and decanting. and **Soaking before hot removal**. The slurry was filtered using a Muslim cloth. The filtrate (soymilk) then bottled it. (Soybean Cyst, 2010).

Sensory Evaluation

Sensory evaluation of soymilk was carried out with 15 trained personnel drown from level (2) Diploma in Nutrition and Dietetics of Galtime Mai Kyari college of Health Science and Technology Nguru, Yobe State. The sensory evaluation was carried out at sensory evaluation laboratory of the Department of Nutrition and Dietetics College of Health Science and Technology Nguru, Yobe. Color, taste, flavor and overall acceptability were rated on a 9points Hedonic scale ranging from 1(like extremely) to

9(dislike extremely) (Hallberg and Rossander, 2010).

RESULTS AND DISCUSSION

Table 4.1 sensory evaluation **of soymilk (WEEK 1)**

Samples	Taste	Flour	Color	Overall Acceptability
Hot Extraction	7.67±1.46[bc]	7.73 ±1.44[bc]	7.47 ±1.92[bc]	7.67 ±1.72[bc]
Cold Method	7.46 ±1.30[ac]	6.00 ±2.07[ac]	7.73 ±1.79[ac]	7.40 ±1.50[ac]
Soaking before	6.73 ±1.44[ab]	7.07 ±1.75[ab]	8.07±1.10[ab]	7.93 ±1.16[ab]

Table 4.2 sensory evaluation of soymilk (WEEK 2)

Samples	Taste	Flour	Color	Overall acceptability
Hot Extraction	8.25 ±0.88[bc]	7.25 ±1.67[bc]	6.75 ±1.28[bc]	8.63 ±0.52[bc]
Cold extraction	7.25 ±4.9[ac]	5.75 ±1.75[ac]	8.38 ±1.19[ac]	7.25 ±1.49[ac]
Soaking before hot Removal	6.78 ±1.28[ab]	6.50 ±2.00[ab]	7.75 ±1.27[ab]	8.25 ±0.89[ab]

Table 4.3 sensory evaluation of soymilk (WEEK 3)

Samples	Taste	Flour	Color	Overall acceptability
Hot extraction	7.00 ±1.73	8.14 ±0.90	7.14 ±2.55	7.00 ±2.31
Cold Method	7.71 ±1.11	6.29 ±2.49	6.14 ±2.21	7.43 ±1.62
Soaking before hot Removal	6.71 ±1.70	7.57 ±1.27	8.43 ±0.79	7.57 ±1.39

Discussion

WEEK 1 From the **table 4.1** above show that soymilk made with hot extraction had the highest score in taste and flavor (7.67), (7.73) and soymilk made with soaking before hot extraction had the highest score in color and overall acceptability (8.07), (7.93) respectively, soymilk made with cold extraction had the lowest score in flavor and overall acceptability (6.00), (7.40) and soymilk made with hot extraction had the lowest score in color (7.47) soymilk made with soaking before hot extraction had the lowest score in taste (6.73) respectively. **WEEK 2** From the **table 4.2** above show that soymilk made with hot extraction had the highest score in taste flavor and overall acceptability (8.25), (7.25) and (8.63) and soymilk made with cold extraction had the highest score in color (8.38) respectively, soymilk made with cold extraction had the lowest score in flavor and overall acceptability (5.75), and (7.25) and soymilk made with soaking before hot extraction had the lowest score in taste and color (6.75), and (7.75) respectively. **WEEK 3** From the **table 4.3** above shows that soymilk made with hot extraction had the highest score in taste (8.14) and soymilk made with cold extraction had the highest score in taste (7.71) and soymilk made with soaking before hot extraction had the highest score in color and overall acceptability (8.43), (7.57) respectively, soymilk made with hot extraction had the lowest score in overall acceptability (7.00) and soymilk made with cold extraction had the lowest score in flavor and color (6.29) and (6.14), and soymilk made with soaking before hot extraction had the lowest

score in taste (6.71) respectively,(Thorsdottir I, et al.,2015).

Conclusion

This study was conducted to identify the descriptive sensory characteristics and consumer acceptability of three different method and laboratory - soymilk and are so nutritious that the latest dietary for human health and its was acts as a cheaper alternative to proving protein- energy for low income families that will help reduce the occurrence of kwashiorkor and wasting. women.

Recommendation

Soymilk is a nutritious milk used for food enrichment due to its rich nutritional content and valuable functional characteristic. This research is recommended that the soymilk is nutritious latest dietary for human health and also alternative to proving protein in humans.

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