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DEVELOPMENT AND ANALYSIS OF MULTI-MILLET CRACKERS

Kiruthika. M[1], Pavithra V.S[2], Dr. Simmi Jain[3]

M.O.P. Vaishnav College for Women (Autonomous)[1-3]

Abstract: Millets are a group of cereal grains that belong to the *Poaceae* family, commonly known as the grass family. Value-added products based on millets may be the distance between customer acceptance and need. Hence this study was taken up with the objective to develop multi-millet crackers, which are thin crackers, incorporating different millets namely pearl millet (Pennisetum typhoides) and sorghum (Sorghum bicolor) finger millet (Eleusine coracana), foxtail millet (Setaria italica), Kodo millet(Paspalum scrobiculatum), Proso millet (Panicum miliaceum), Brown top millet(Urochloa ramose), Barnyard millet (Echinochloa esculenta) , Little millet(Panicum sumatrense) as variants in wholegrain composite flour. The nutritional composition and shelf stability was analyzed by using standard protocols. The results revealed that products were high in protein content (11.04-17.54%),. Sensory evaluation showed that the finger millet incorporated product had low acceptability compared to the rest of the millets used. In conclusion, a shelf-stable traditional ready-to-eat snack can be developed using different millets which can be used as a functional food.

INTRODUCTION

Kodo millet or Koda millet (*Papsulum scrobiculatum*) is a drought-tolerant plant that grows up to 4 feet tall. It is cultivated in Vietnam, Nepal, and West Africa. It consists slender leaves of 20 to 40 cm. it requires very little water to grow. Pearl millet (*Pennisetum glacum*) grown in west Africa, is an economically significant small-seeded species. It is commonly called as bulrush millet. Annually 15 to 20 million tonnes of pearl millet is cultivated. Foxtail millet is grown in semi-arid regions. They are 2mm in size and covered with a thin crispy hull. It has many benefits like managing diabetes, promoting cardiac health, triggering weight loss, stronger bones, helping in nervous health, improves immunity. Proso millet *(Panicum miliaceum*). It is a warm-season grass that is highly nutritious and used for human consumption. It has unique characteristics like drought tolerance and heat tolerance. Barnyard millet (*Echinochloa* species) cultivated for human consumption and livestock feed. It is an excellent source of protein, carbohydrates, fibre, and micronutrients like iron and zinc. It is an underutilized crop. It is an ancient millet grown in temperate regions of Asia and India. Browntop millet is a gluten-free millet grown in Karnataka, Andhra Pradesh, and north central India. It can be grown in hard soil and it requires a small amount of water. They are heat tolerant, drought tolerant, and shadow tolerant. Sorghum (Sorghum bicolor) also called as Indian millet is an edible starchy seed of the grass family Poaceae. It originated from Africa and is available in many varieties like grain sorghum, and grass sorghum. It is a short grass grown at a height of 0.6 to 2.4 meters. The leaves are 5cm broad and 76 cm long and therefore multi millet crackers was developed and anlysed.

MATERIALS AND METHODOLOGY

- Kodo millet
- Proso millet
- Pearl millet
- Foxtail millet
- Sorghum
- Barnyard millet
- Brown top millet
- Onion
- Oil
- Coriander
- Methi
- Chilly
- Pepper powder
- Sesame seeds
- Curd

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- Cumin seeds
- salt

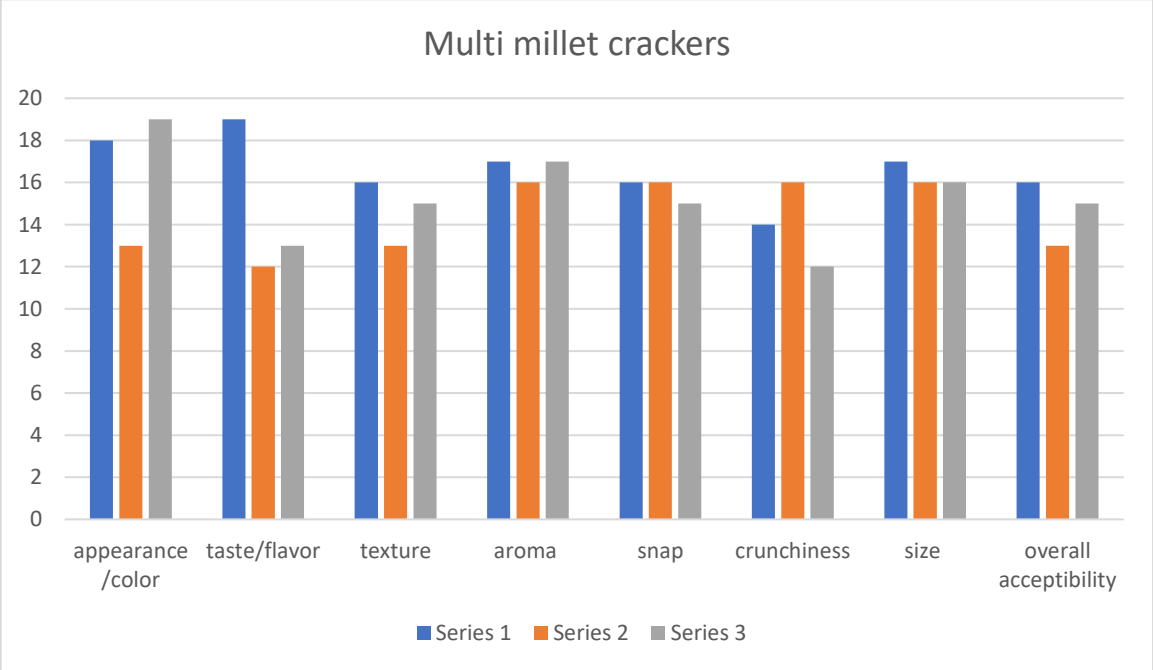
Add millet flour, Cumin seeds 1tbsp,Sesame seeds 2tbsp, Coriander 1tbsp, Salt1/2tsp, Onion powder 1tsp, Pepper powder 1tsp, Baking soda 1/2tsp, Green chilly 1no, Methi 1tsp mix well. Knead into a tight dough by sprinkling warm water little by little. Cover the dough with a wet paper towel. Let it rest for 20 min. Knead the dough for 1 min Roll the dough into thin flat bread. Prick the bread with a fork so the crackers won't puff. Cut into the desired shape. Bake at 350F for 22 minutes. Flip the crackers once after 11 minutes.

Variations

Millets	V1	V2	V3
Kodo millet	50	25	50
Proso millet	50	25	50
Foxtail millet	50	50	25
sorghum	50	75	150
Pearl millet	50	25	25
Barnyard millet	50	50	25
Browntop millet	50	150	75
Little millet	50	50	25

Sensory analysis

Sensory analysis was done and v1 was found to be the best among the three variations and pH, moisture, ash, protein, carbohydrate, iron, and fat content were determined for variation 1.



Proximate analysis

- Determination of moisture
- Determination of ash
- Determination of pH
- Determination of carbohydrate
- Determination of iron
- Determination of protein

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RESULTS

Analysis was done for three variations and values were taken in triplicates. The average values was taken and mentioned below.

Antioxidant	pH	Moisture	Ash	Protein	Carbohydrate	Iron
1764.5mg	9.051	87.479%	2.56%	5.56g	71.428mg	3.8mg

DISCUSSION

Protein-rich millets flours were combined to make the crackers. According to the analysis conducted, it was found to be protein-rich. Other nutrients like iron, and antioxidants. Minerals were also tested. The pH, Moisture was also analyzed.

CONCLUSION

Millets like foxtail, Kodo, proso, pearl, barnyard, brown top, little millet, and sorghum were used to make this cracker. The sensory analysis showed that when these millets were added in equal quantity the crackers were more acceptable.

Appendix

Variation 1

variation 2

Variation 3

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REFERENCES

[1]. Mcdonough , Cassandra. M (2000) “The millets”, Food Science and Technology, Hand Book of Cereal science and Technology.