



FORMULATION AND SENSORY EVALUATION OF DRUMSTICK (MORINGA OLEIFERA) SEEDS POWDER INCORPORATED COOKIES

¹Dr. M. ANGEL, ²B.ATCHAYA,

¹Assistant Professor, ²II M.Sc.Student,

¹Department of Nutrition and Dietetics, ²Department of Nutrition and Dietetics,

¹Jamal Mohamed College(Autonomous), ²Tiruchirappalli, India-620 020,

¹Jamal Mohamed College(Autonomous), ²Tiruchirappalli, India-620 020.

ABSTRACT

One of the greatest risk factors for cardiovascular diseases is hypocholesterolemia. *Moringa oleifera* is a good source of phytochemicals and is well explored for its antioxidant properties. The *Moringa oleifera* seed powder was studied for its hypocholesterolemic activity. *Moringa oleifera* seed was collected, sundried for 3 days and finally its ground into powder. The *Moringa oleifera* seed powder was used in cookies with 3 variation of each 5%, 10%, and 15% respectively. The standard cookies and 3 variation were given to 20 panel members and found the highest acceptability. Of all the variation 1 with 5% *Moringa oleifera* seed powder incorporated cookies had the highest acceptability.

Keywords: Hypocholesterolemia, *Moringa oleifera* seed, cookies.

INTRODUCTION

The tree of *Moringa oleifera* (*Moringa oleifera* Lam.) is described as the miracle tree, tree of life, and God's gift to man (Mbikay et al., 2012).

Medicinal plants are nature's gift to mankind to make disease free healthy life and play a vital role to maintain good health. *Moringa oleifera* Lam. or *munga* is one of the most important plant widely cultivated in India. It belongs to family Moringaceae. This plant is widely used as nutritional herb and contains valuable pharmacological action like anti-asthmatic, anti-diabetic, hepatoprotective, anti-inflammatory, anti-fertility, anti-cancer, anti-microbial, anti-oxidant, cardiovascular, anti-ulcer, CNS activity, anti-allergic, wound healing, analgesic, and antipyretic activity, *Moringa oleifera* Lam (Shivakumarhugar et al., 2018).

Moringa has nutraceutical uses and is used in the treatment of hypercholesterolemia and hyperglycemia. As a nutritional supplementation, it can be prescribed as food appendage for coronary artery disease patients along with their regular medicines (Rajanandh et al., 2012).

Moringa help in treating hyperthyroidism, Crohn's disease, antiherpes-simplex virus arthritis, rheumatism, gout, cramp, epilepsy and sexually transmitted diseases, can act as antimicrobial and anti-inflammatory agents (Leelawat et al., (2014))

Moringa seed is used in the treatment of hypercholesterolemia and hyperglycemia, and also, as a nutritional supplementation (Asare et al., (2012)).

Every part of this plant contains a valuable medicinal feature. It contains rich source of the vitamin A, vitamin C and milk protein. Different types of active phytoconstituents like alkaloids, protein, quinine, saponins, flavonoids, tannin, steroids, glycosides, fixed oil and fats are present. This plant is also found in the tropical regions. Contains oleic acid (Ben oil), antibiotic called pterygospermin, and fatty acids like Linoleic acid, linolenic acid behenic acid. Some other constituents are niacinin A,

niazinin B and niazimicin A, niazimininB. Medicinal plants are nature's gift to mankind to make disease free healthy life and play a vital role to maintain good health (Rockwood *et al.*, 2010)

In view of this, present study deals with the standardization and formulation of drumstick seed (*Moringa oleifera*) food product. Though the *Moringa oleifera* tree is available everywhere, people are unaware of health benefits of the seeds. Hence the investigation made an attempt to carry out a research on *Moringa* seed.

MATERIALS AND METHODS

SELECTION, PROCUREMENT AND PROCESSING OF RAW MATERIALS:

Selection, procurement of *Moringa oleifera* seed:

In this process of making a food product from components that has *Moringa oleifera* as main ingredient and other pulses and cereals as other ingredients as the substituent, we have a simple and easy method of bringing up the ingredients as a mix.

Treatment of *Moringa oleifera* seed:

The *Moringa oleifera* seed are taken or bought for a moderate rate from a local shop or market and cleansed thoroughly for removal of dirt. Then, the *Moringa oleifera* seeds are dried of from moisture content and taken in a clean and dry tray of good convenience.

Preparation of *Moringa oleifera* seed Powder:

The *Moringa oleifera* seed in the plate are left outside in a free area for sun-dry to be natural for consumption for about a time of 2-3 days. After this, the dried *Moringa oleifera* seed are ground into a fine powder which is then ready for the health mix.

Storage of *Moringa oleifera* seed:

Moringa oleifera seed powder was stored in an air tight container for the development of food product and for the analysis of nutrients.

Procurement of other ingredients:

The other ingredients added to prepare the food products are wheat flour, jaggery, butter.

STANDARDISATION AND FORMULATION OF MORINGA OLEIFERA SEED POWDER INCORPORATED FOOD PRODUCTS:

According to United States Department of Agriculture (USDA), a standardization is defined as one that "has been tried, adapted and retried several times for use by a given food service operation and has been found to produce the same good results and yield every time when the exact procedures are used with the same type of equipment and the same quantity and quality of ingredients". In easier terms, a standardized recipe is a complete, specific set of written instruction for cook to produce consistent high quality recipes every time (<https://dphhs.mt.gov/portals>, 2018).

The following *Moringa oleifera* seed powder incorporated food products were standardized and prepared.

- *Moringa oleifera* seed Cookies

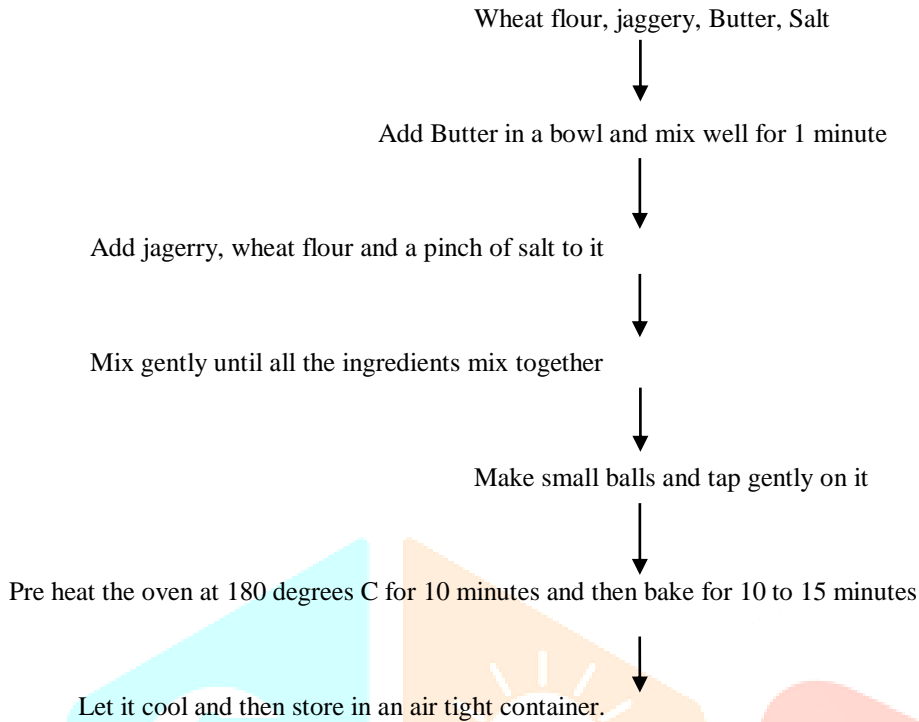
STANDARDISATION AND FORMULATION OF MORINGA OLEIFERA SEED POWDER INCORPORATED COOKIES:

A Standard *Moringa oleifera* seed powder incorporated cookies was prepared using various natural ingredients which are locally available such as Wheat flour, jaggery, butter, salt without *Moringa oleifera* seed powder

Moringa oleifera seed powder incorporated cookies was prepared in three variations. 1 variation containing Wheat flour 55g, jaggery 40g, butter 40g, salt and *Moringa oleifera* seed powder 5g and another variation containing Wheat flour 50g, jaggery 40g, butter 40g, salt and *Moringa oleifera* seed powder 10g and another variation containing Wheat flour 45g, jaggery 40g, butter 40g, salt and *Moringa oleifera* seed powder 15g.

PREPARATION OF MORINGA OLEIFERA SEED POWDER INCORPORATED COOKIES:

Flow chart for the preparation of Moringa oleifera seed powder incorporated cookies:



RESULT AND DISCUSSION

STANDARDISATION AND FORMULATION OF MORINGA OLEIFERA SEED POWDER INCORPORATED COOKIES:

S.No	Ingredients	Standard (g)	Variation 1 (g)	Variation 2 (g)	Variation 3 (g)
1	Wheat flour	60	55	50	45
2	Jaggery	40	40	40	40
3	Butter	40	40	40	40
4	Salt	A pinch	A pinch	A pinch	A pinch
5	Moringa oleifera seed powder	-	5	10	15
	TOTAL(g)	140	140	140	140

S- Standard, V1- Variation 5%, V2- Variation 10%, V3- Variation 15%.

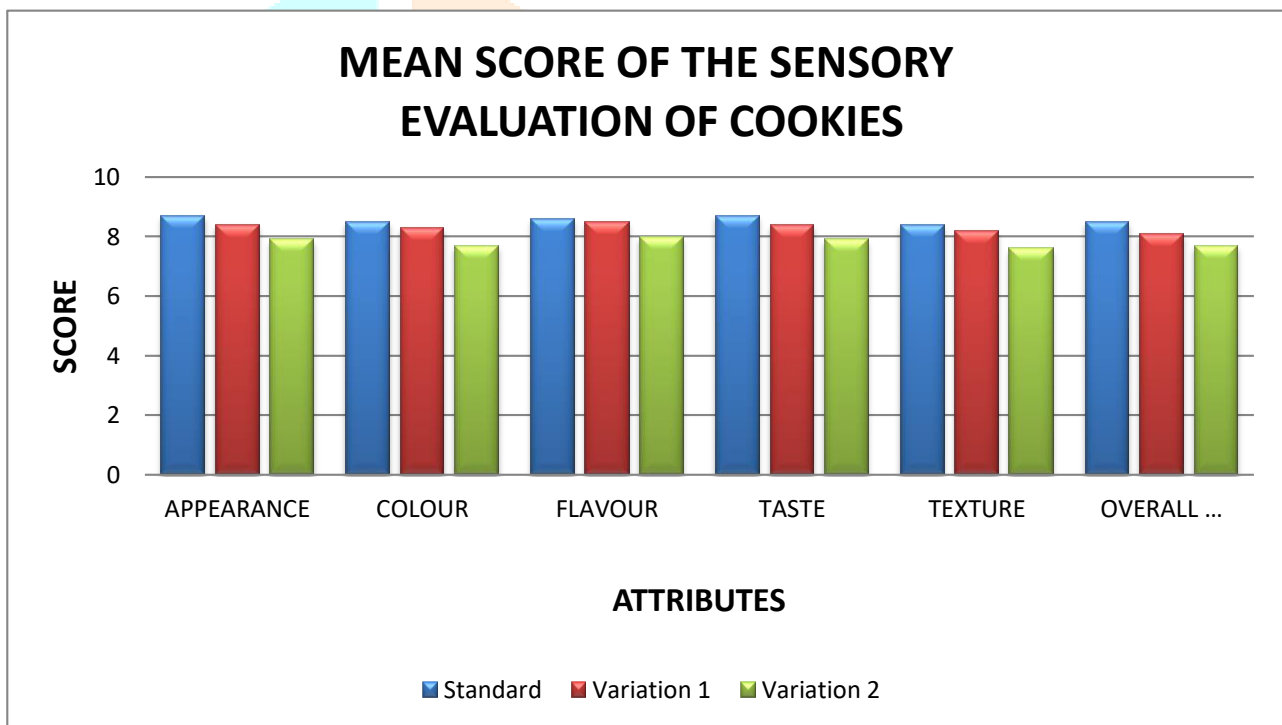
MEAN SCORE OF THE ACCEPTABILITY OF MORINGA OLEIFERA SEED POWDER INCORPORATED COOKIES

SAMPLE	MEAN ± STANDARD DEVIATION
Standard	8.9
Variation – 1	8
Variation – 2	7.7
Variation – 3	7.2

Standard, V1- Variation 5%, V2- Variation 10%, V3- Variation 15%.

The overall acceptability of Moringa oleifera seed powder incorporated Cookies revealed that the variation 1 has got the highest mean score of. The least accepted sample were V3 with a mean score. The mean score of the Variation 1 is higher than all the variations.

MEAN SCORE OF THE SENSORY EVALUATION OF MORINGA OLEIFERA SEED POWDER INCORPORATED COOKIES



The mean score of the sensory evaluation showed that Moringa oleifera seed powder incorporated cookies, the variation 1 has been better appearance of (8.4), colour (8.3), Flavor (8.5), Taste (8.4), Texture (8.2), and overall acceptability(8.1) among all the other variations. Of all the cookies with the incorporation of Moringa oleifera seed powder at 5% had the highest level of overall acceptability.

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