

RESEARCH ARTICLE

NUTRITIONAL VALUE OF SUPERFOOD MORINGA TEA

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Abstract

Moringa (*Moringa oleifera*), family Moringaceae also called as a Drumstick tree belongs to a and this is fast growing, drought resistant annual shrub. It thrives in well drained loamy soils and its leaves are taken for preparation of various items. It also contains some medicinally important compounds known as, flavonoids, saponins, terpenoids compounds and other glycosides tannins. Nearly other parts of moringa like flowers, seeds, roots and pods, can be used in different industrial applications e.g. cosmetics, animal feed, human food etc. In this research paper it will be discussed methods for processing, preparation of moringa tea and its nutritional importance. It was also covered some health benefits related to human beings and market potential of moringa tea in Indigenous and global market in the upcoming years.

Keywords: Superfood, Nutritional Value, Moringa Tea, Health Benefits.

Introduction:-

Moringa (*Moringa oleifera*), family Moringaceae is a softwood, plant known as native of Indian sub continent, found wildly in the sub Himalayan regions of Northern India region and has grown worldwide in the sub-tropics and tropics regions. Moringa is an annual plant grown to Northwestern and Southern state of India and widely cultivated mainly in Maharashtra, Karnataka, Odisha and other states. Moringa known as the "drumstick tree" because of the shape of its seed pods. The drumstick or pod of moringa is a very popular and delicious used in the

vegetable such as sambhar, potatoes, dal and other recipe in Southern states Indian subcontinent considered as valued cuisine for its distinct flavor, taste and nutritious value.

Huma Babar et al (2022) have studied that on *Moringa oleifera*, a high valued plant which produces world-wide and utilized in various food preparations, it also has medical and industrial applications. *Moringa* plant is popularizing due to leaves, pods, seeds, and flowers are rich in nutrients. *Moringa oleifera* is called as a miracle tree, due to its numerous nutritional and medicinal health benefits, and good source of essential components. *Moringa* seeds oil used for as skin lotion and perfume. *Moringa* leaves also used in various chronic diseases like hypercholesterolemia, insulin resistance, liver diseases, hypertension, cancer, diabetes and inflammation. *Moringa* leaves extract said to be used to treat diabetes cardiovascular disease, malnutrition. *Moringa* seeds has been used to enhance water quality. *Moringa* is found a rich source of nutritive components and various essential phytochemicals, which are present in its leaves, pods, and seeds. *Moringa* can be used for numerous nutritional as well as for commercial purposes. *Moringa* have significant health benefits for the maintenance of the body due to it has various nutritive components. The *moringa* seed powder can be used to purify dirty water and it possesses many health benefits (1).

Moringa's has unbelievable medicinal value which is claimed by many cultures and communities based on real life experiences are established by science. The *Moringa* contains a lot of essential minerals, nutrients, vitamins, beta carotene, amino acids, antioxidants, anti-inflammatory nutrients and omega 6 fatty acids and omega 3 (2).

Table 1: Composition of *Moringa* leaves (*M. oleifera*), raw, Nutritive value per 100 g. (Source: USDA Nutrition database.)

| Principle | Nutritive Value | Percent of RDA |
|-----------------|-----------------|----------------|
| Energy | 64 Kcal | 3.2% |
| Protein | 9.4 g | 17% |
| Carbohydrates | 8.28 g | 6% |
| Total Fat | 1.4 g | 7% |
| Dietary Fiber | 2 g | 5% |
| Cholesterol | 0 mg | 0% |
| Vitamins | | |
| Folates | 40 µg | 10% |

| | | |
|---------------------|----------|-------|
| Niacin | 2.22 mg | 14% |
| Pyridoxine | 1.2 mg | 9% |
| Pantothenic acid | 0.125 mg | 2.5% |
| Thiamin | 0.257 mg | 21% |
| Riboflavin | 0.66 mg | 5% |
| Vitamin C | 51.7 mg | 57% |
| Vitamin A | 7560 IU | 252% |
| Electrolytes | | |
| Potassium | 337 mg | 7% |
| Sodium | 9 mg | 0.6% |
| Minerals | | |
| Calcium | 185 mg | 18.5% |
| Copper | 0.105 mg | 12% |
| Zinc | 0.60 mg | 5.5% |
| Magnesium | 42 mg | 10.5% |
| Manganese | 1.06 mg | 46% |
| Phosphorus | 112 mg | 16% |
| Iron | 4 mg | 50% |

Ref: <https://fdc.nal.usda.gov/fdc-app.html#/food-details/168416/nutrients>

Moringa leaves are the most nutritious part of the plant, being a significant source of B vitamins, vitamin C, provitamin A as beta-carotene, vitamin K, manganese, and protein (4). When it take 100gm fresh moringa compared with common foods particularly high in certain nutrients, cooked moringa leaves are substantial sources of these same nutrients. Some of the calcium in moringa leaves is bound as crystals of calcium oxalate (5) though at levels 1/25th to 1/45th of that found in spinach, which is a negligible amount. Moringa leaves can be cooked, used like spinach leaves are dried and crushed into a powder used in soups and sauces.

It has been found that the leaves moringa are rich in vitamins, minerals and other essential micronutrients. Extracts from the leaves are used to treat malnutrition, increase breast milk in lactating mothers. It find used as potential antioxidant, anticancer, anti-inflammatory, antidiabetic and antimicrobial agent. Moringa seed, a natural coagulant is extensively used in water treatment. The scientific effort of this research provides insights on the use of moringa as a cure for diabetes and cancer and fortification of moringa in commercial products. The review was examined the use of moringa across disciplines for its medicinal value. Due to its nutritional,

commercial and prominent pharmacological properties of moringa called “Miracle Tree” (Lakshmipriya et al; 2016) (6).

Moringa has been classified as a "superfood" reasons for its leaves are rich source of vitamin C, antioxidants, chlorogenic acid, beta-carotene, which slows down the absorption of sugar at the cellular level. As per the Asian Pacific Journal of Cancer Prevention, moringa leaf extract has potent antioxidant properties against free radicals that destroy essential biomolecules and protect against oxidation.

Moringa is called 'miracle herb' due to its nutritional values and it is also termed as 'superfood'. The moringa leaves is being converted into powders which can be fortified with tea and is now used in number of traditional recipes of condiments and main dishes. Moringa leaves are used as vegetable and pods are used to prepare many cuisines in India and abroad.

This research study was mainly focused on **Moringa tea** which nowadays is becoming popular refreshing drink among people preferred instead of any another tea products due to its high nutritional value.

Moringa tea is an herbal tea made by steeping the moringa leaves in fresh hot water. The tea can also be prepared by using moringa leaf powder and tea bags made by moringa leaves.

If go through the literature it can be find that the moringa tea is naturally free from caffeine and resemblance with green tea, it also offers an earthy flavor due to presence to naturally available nutrient. Moringa tea can be flavored by the addition of honey, mint, and cinnamon or any other flavoring substances according to the taste of individuals.

Moringa leaves powder is widely sold on online and general stores. It's leaves powder can be boiled in water filtered through a sieve to get a bright green tea, called moringa tea. There are many brands are available in the market, we can also make moringa powder at home. Fresh and dried leaves make powder, dehydrate it and boil them in water for a few minutes to make moringa tea.



Fig 1: Moringa leaves



Fig 2: Moringa leaves and Powder

EXPERIMENTAL

Preparation: Process for drying of moringa leaves

Step 1. Prepare moringa leaves (do not pick young and tender leaves, flowers or seeds), the leaves collected from 3-5 stalks.

Step 2. It is crucial to dry the leaves beforehand. Furthermore, keep fresh leaves on a plain surface and air dried. The process of drying of leaves takes a day, and sometimes it can take a few days or depending upon intensity sunlight and humidity and weather conditions. Check the dried leaves are ready to use when they become crisp.

Step 3. Separate dry leaves from stalk. It can be added soft parts of the stalk into the tea along with leaves as they contain good amount of fiber which enhance the digestion process.

Step 4. Placed dried leaves into a blender and grind them well into gritty size. It should grind to make gritty powder excessive grinding become fine powder which may be avoided.

Step 5. The powdered and blended moringa leaves packed into the suitable package, glass jar and store it in a container. It is better to keep this product in a dry place and air tight containers, for prolonging the self life of the product.

Step 6. Since it aim to prepare moringa tea, boil water and add a teaspoon of moringa leaves into the cup and pour in hot water just like you do while preparing normal tea, add some sugar or honey as per taste. It can also be added fresh lemon juice into tea, is supplement of vitamin C.



Fig 3: Moringa leaves tea

Method and preparation of moringa tea

The present invention related to a moringa tea and a method for producing for various medicinal importance and health benefits of the same. There is more particularly to a method for producing a moringa tea by collecting and extracting of the moringa leaves to increase the concentration of the content in the moringa leaves tea. In this study it has been explored to prepare moringa leaves tea which is available around the year. The moringa leaves can be used as a raw material for the preparation of other nutritional food supplement, for the person deficient of various naturally occurring micronutrients.

Processing of moringa tea

Moringa Black Tea

There are various processing steps in the preparation of moringa black tea is rolling, withering, and fermentation, grading, drying, and packing. Withering has been carried out by spreading tea leaves thinly on leaf is lowered.

The withered leaves are then rolled to break open the cells and characteristics inherent in various tea partially depend on the technique used. After rolling, leaves temperature between 21-27⁰C.

During this process enzymes bring about the oxidation of various polyphenols present in the juices, resulting in the change of color from green to reddish colour.

Two of the vital polyphenols that undergo changes are mainly catechin and gallic acid. When the fermentation has proceeded to the desired degree, further change is arrested by drying. This comprises the passing of the fermented leaves through a chamber in which hot air is circulating.

At the entrance of the chamber, the temperature is 93⁰C which drops to about 49⁰C near the exit. Besides halting the fermentation process, firing causes some caramelization to occur resulting in the characteristics color and flavour of black tea leaves.

Moringa tea health benefits

- 1) **Heart Health** - Moringa extract studies in animal has found improved health of heart.
- 2) **Benefits in Controlling Diabetes** – In case of diabetes Moringa tea could help people to regulate their glucose levels in the blood and shows positive results. But less consistent on Human studies.
- 3) **Brain Health** - Studies have conducted on animal study, moringa leaf extract found positive effects on brain chemistry.
- 4) **Protection Against Chronic Disease** - Moringa leaves containing several components that can stave off chronic disease. Moringa helps in combating heart disease, and liver damage, diabetes, these compounds also fight chronic inflammation (7).

Nutritional Facts of Moringa Tea

Moringa roots, moringa seed oil and moringa leaves contains many essential vitamins and nutrients. Various studies suggested that moringa leaves containing the majority nutritional components as compared to other plant parts. According to the USDA, raw moringa tea leaves contain a number of vitamins and minerals. The moringa leaf is a significant source of vitamin

A, vitamin C (ascorbic acid), and vitamin B6. The leaves of the moringa plant also contain high amounts of essential nutrients such as beta-carotene and amino acids. One hundred grams of moringa leaves also contain a protein content of around 9 grams (6)

Future market of Moringa tea

Superfood Moringa tea is a most nutritive drink in the various countries. Moringa leave tea is now a popular beverage. Moringa tea is fast becoming a popular choice among 'health freaks' and the drink is also said to have several health benefits for us.

It has been considered that several sources for your daily dose of vitamins and minerals, one cup of Moringa tea can sufficient to the health benefits your need. Made from 100% *Moringa Oleifera* leaves, this tea has vitamins, minerals and antioxidants and also rich in refreshing nutritious components. It has been found that there is no other plant leaf that contains such a concentrated amount of nutrients this tea truly beats them all. Moringa tea is caffeine-free and energy boosting, it is full of natural components that support the immune system, with no artificial fillers and additives. Moringa tea is an excellent source of antioxidants and outperforms some of the most popular super foods to be had today.

Oxygen Radical Absorbance Capacity (ORAC) tests, that is the unit measurement, developed by the National Institute on Aging in the National Institutes of Health (NIH), to express the moringa is super foods.

Moringa *Oleifera* high antioxidant activity helps protect your body from free radicals; those unstable molecules that are highly reactive and that have the potential to cause damage to cells, including damage that may lead to cancer. High antioxidant levels are just another benefit of Moringa Tea. By seeing this all data, we can say that moringa tea having a great future market amongst other tea products.

Global future trend of Moringa tea

The moringa tea market is projected to rise at a stable rate over the 2020-2030 forecast periods. Due to rising awareness of the health benefits of various parts of moringa tree, including moringa leaves for a health concoction is fueling the moringa tea market. Ayurvedic experts and

naturopaths advocate consuming moringa tea to build immunity and fight several medical conditions.

Moringa is called as a super food with more Vitamin C as compared to oranges, and more potassium than in bananas, and more protein than in milk, and more Vitamin A content than in carrots.

Moringa Tea Market: Key Trends

Huge increase in demand for caffeine-free beverages is a key factor contributing to growth in the moringa tea market. Leaves of the moringa tree, is 100% caffeine free, unlike commonly consumed black tea and green tea. It is alternatives of caffeine- free beverages are increasingly moringa tea that has health benefits.

Furthermore, moringa tea is ranked among health supplements for its composition and anti-inflammatory properties. Also, scientific studies on animals have confirmed health benefits of moringa tea, which was reported in the journal.

Large volume export of moringa tea from the region to serve the vast rise in popularity of moringa tea in Western countries is further fueling the moringa tea market in the region.

Conclusion

It can be concluded that the moringa leaves have various essential compounds which is required basically to overcome nutritional deficiency of the human being. Nowadays various value added products are being developed using moringa leaves and other parts of the drumstick. In the US also Moringa leaves demand has been raised for the preparations of antidiabetic tea. Large volume export of moringa tea from the region to serve the vast rise in popularity of moringa tea in Western countries is further fueling the moringa tea market in the region. In addition, it also needs further socialization of moringa related to the myth of people towards such foodstuff.

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