

The Processing of Millet Spread Incorporating Finger Millet and Pearl Millet

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ABSTRACT

Inventions and improvisation are novel things for improving our state of life. As a food engineer we try to introduce new ideologies to each and every possible aspects. Here we are going to discuss about millet spread made of millets. Nearly half of the people in the world takes bread for their breakfast. Obviously not bread alone but with some spreads for extra mouth feel probably we may not know how much it costs our health. Breakfast are essential thing to start our day. It is extra special than any other meal because it breaks our overnight fasting. A good breakfast can keep your day active and healthy. To add extra flavours and goodness to our breakfast we got an idea to blend a spread to top your breads. We all have may aware of millets and their extraordinary benefits in human life. It is combined of all essential supplements our body needs which completely satisfies your body requirements. So why not to try spread made of millet. So here we got an theme to replace your regular bread spread with some healthy millet spread. Here we infused with two millets and blended them to get a creamy consistency and made it extra delicious through our processing. Lets have a view on our processing of millet spread a good spread to start your day.

Keywords: Millet Spread , Food Technology, Finger Millet.

1. Introduction

Millets are traditional grains, grown and eaten in the Indian subcontinent for atleast the past 5000 years. They are rain-fed, hardy grain which low requirements of water fertility when compared to other popular cereals. Millets can be split into two broad categories: Naked grains and Husked grains. "Naked grains" are the three popular millets (Ragi, Jowar and Bajara) which don't have a hard undigestible husk. These millets don't need to be processed after harvest , they just need to be cleaned and can be used. Because of this reason, they are still popular in our country and are widely cultivated (they are also called major millets because of this reason). "Husked grains" are the other millets, like Foxtail millet (navane), Little millet (same) and Kodo millet (hark), which have undigestible seed coat. This husk needs to be removed before the grain is fit for human consumption. This used to done by centuries past and so was rice. However the mechanization of the processing of these minor millets didn't keep pace with raise and other cereals so they soon become unpopular. Millets are highly nutritious, rich in fibre and gluten-free, making them easy for the body to absorb. They are rich in huge spectrum of micronutrients, including calcium, iron, phosphorus, etc,... They are slow digesting foods which don't cause the huge spike in blood sugar which is caused by eating polished rice, therefore millets help with preventing and controlling diabetes. Millets should ideally be an integral part our daily diet. They add variety and balance to your food. They can replace white rice in all your meals. With climate change on our minds and rainfall becoming more and more unpredictable, millets are turning out to be one of the most important grains for the whole world. Being rain-fed crops , millets put mineral

stress on our delicate, already overloaded water systems. Growing millets doesn't necessitate construction of expensive & ecologically disruptive dams and irrigation system. They can survive on soil where rice and wheat cannot grow, even slightly saline and acidic soils, so they can grow well without fertilizers and other soil enhancing chemicals. Also millets are not susceptible to pests and don't need spraying of pesticides. Millets strengthen food security since they are less likely to fail than other cereal crops.

2. Nutritional Chart of Finger Millet

Nutritional Chart Of Finger Millet : (100 gm)

NUTRITIONAL CONTENT IN 100 GRAMS OF FINGER MILLET	
Protein (in gms)	7.3
Carbohydrates (in gms)	72
Fat (in gms)	1.3
Minerals (in gms)	2.7
Fiber (in gms)	3.6
Calcium (in mgs)	344
Phosphorous (in mgs)	283
Iron (in mgs)	3.9
Energy (in Kcals)	336
Thiamine (in mgs)	0.42
Niacin (in mgs)	1.1

Nutritional Chart Of Pearl Millet:(100 gm)

Carbohydrates:	67.5 gm
Protein:	11.6 gm
Phosphorous:	296 mg
Magnesium:	137 mg
Potassium:	307 mg
Iron:	8.0 mg
Calcium:	42 mg
Carotene:	132 mcg
Dietary fiber:	11.3 gm
Essential Amino Acids:	1.86gm

3. Health Benefits Of Finger Millet

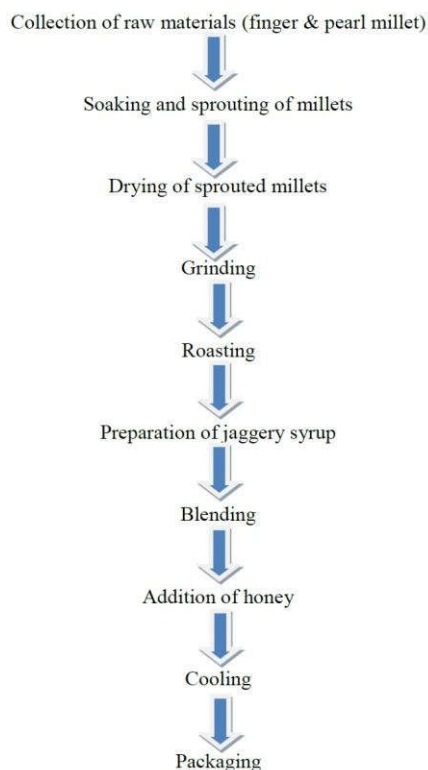
- Maintains Bone Health: Ragi is the richest source of calcium among plant foods. Calcium along with vitamin D help strengthen bones.

- **Aids Weight Loss:** Ragi contains amino acids, tryptophan which reduces appetite. It has a much higher amount of dietary fiber compared to white rice and other grains. It is also a low fat cereal and most of the fats are in the unsaturated form. This makes it the best choice in grains for people trying to weight loss.
- **Lowers High Cholesterol Level:** Ragi contains amino acids, lecithin and methionine which help bring down cholesterol levels by eliminating excess fat from liver. The high fiber content of ragi also helps manage cholesterol problems.
- **Helps in Anemia:** Ragi is an excellent plant source of natural iron. Its consumption helps in anemia.
- **Reduces Diabetes Risk:** Due to the high polyphenol and dietary fiber content in finger millet, regular consumption is known to reduce the risk of diabetes mellitus and gastrointestinal tract disorders.
- **Helps in Relaxation:** One amazing benefit of ragi is that it helps in relaxing the body naturally. It is found to be beneficial in conditions, migraine and insomnia.
- **Source Of Essential Amino Acids:** Ragi is rich in amino acids vital for the body. Finger millet contains amino acids namely Tryptophan, Threonine, Valine, Isoleucine and Methionine.

4. Health Benefits of Pearl Millet

- **Powerful For Controlling Diabetes:** Pearl millet is very powerful in controlling diabetes. Because of its high fiber content, it tends to digest slowly and release glucose at a slower rate as compared to other foods. This helps in maintaining healthy blood sugar levels for a long period of time.
- **Weight Loss:** Being high in fiber content, it takes a longer time for the grain to move from the stomach to the intestine. This way, bajra curbs hunger for a long span of time.
- **Reduces Cholesterol:** It contains phytochemical, which is called phytic acid believed to increase cholesterol metabolism. It also stabilises the level of cholesterol in the body.
- **Helps In Digestion:** Bajra is rich in insoluble fiber that aids digestion. It also reduces secretion of bile acids and is linked to lower risk of gallstone formation.
- **Helps Prevent Cancer:** Bajra has cancer protecting properties. A study showed that regular intake of bajra protects premenopausal women from developing breast cancer.

5. Flow Chart For Millet Spread:



6. Methodology

Collection of raw materials : Selection of highly proteinous, well harvested millets which are generally rich in fiber and other essential requirements.

Soaking and sprouting of millets: Then these unsprouted millets are placed in a sterilized large mason jars or a cleaned vessel and cover them with 2 to 3 times the amount of pure and filtered water. Then leave it for 8 to 12 hours. And cover the mouth of the jar or vessel with a sprouting lid or a cloth. Then leave it for 8 to 12 hours. Leave it then until they begin to develop a tail like protrusion. Soaking softens the hull allowing the sprouts to grow. They are usually ready to use when the sprout is ¼ inch. The sprouted millets contain higher amount of nutrient content and much more health benefits than raw millets.



Drying: Finally rinse and drained the sprouted millets once again and then remove the jar lid or cloth and dump all the sprouts out onto a clean, absorbent kitchen towel. Spread them all out onto layer and let them air dry for 30 to 60 minutes. The dryers used for this purpose are solar or infrared dryers.

Grinding: Then the dried sprouted millets are grind into a powdered form using blender. Then sieve the powdered form of millets to get the fine powder.

Roasting: These sprouted millet flour is roasted at 180C for 60 seconds in roasting pan or by using roasting equipment to remove the moisture content and to enhance the flavor in the dried sprouted millets.

Preparation of jaggery syrup: First we have to smash the jaggery. Take 1 cup of smashed jaggery and ¾ cup of water in a pan. Heat this mixture until it melts and boil for 2 minutes in medium flame. This is done until the jaggery to melt completely. Then strain to remove impurities. Then heat it up again and heat stirring for few minutes until you get a slightly sticky consistency.



Blending: The powdered millets and jaggery syrup are to be blended together to make a millet spread.

Addition of honey: In the next step honey is to be added to enhance the flavor and sweetness of the millet spread. Moreover honey has more number of medicinal benefits.



Cooling: During blending process some amount of heat may produced. To reduce that heat we have to cool that desired product for the required time.



Packaging: After the cooling process is done the millet spread should packed in a airtight containers. Finally the millet spread to be stored and distributed.



7. Conclusion

Being a routine food, Spreads literally never bores us. there are 'n' number of spreads available out there in the market which usually amaze our taste buds. we believe that our millet spread is also one among them which will give you a lip smacking experience. It is a combination of nutritious millet and honey which would rather give you a unique taste other than usual. Honey adds sweetness not only does it enhance the flavours, it also improves the texture. It doesn't contain any bad cholesterol like so called cheese spreads. you don't need to compromise your health for getting some good flavours. Have a healthy tummy with a tasty buds with our unique millet spread.

REFERENCES

- [1] Dikshit, Madhurima; Ghadle, Mangala (2003). "Effect of sprouting on nutrients, antinutrients and in vitro digestibility of the MACS-13 soybean variety". *Plant Foods for Human Nutrition*. 58 (3): 1–11. doi:10.1023/B:QUAL.0000040357.70606.4c. S2CID 84496987
- [2] "drying - definition of drying by the Free Online Dictionary, Thesaurus and Encyclopedia". Farlex. Retrieved 23 April 2011.
- [3] .Adithan, M.; Gupta, A. B. (2002), *Manufacturing Technology*, New Age International Publishers, ISBN 978-81-224-0817-1.
- [4] "Jaggery and Confectionary". APEDA, Agricultural & Processed Food Products Export Development Authority. Ministry of Commerce and Industry, Government of India. Retrieved 2009-06-19.
- [5] International Dictionary of Refrigeration, <http://dictionary.iifir.org/search.php>
- [6] "Various Mixing Experiments". Bakker.org. 10 April 1998. Archived from the original on 26 June 2017. Retrieved 23 June 2017.
- [7] List of healthy spread food (health.com) Archived 2016-12-16 at the Wayback Machine
- [8] Verma, V. and Patel, S. value added products from nutria-cereals: Finger millet (Eleusine coracana). *Emir. J. Food Agric.* 2013.25(3):169-176, Department of Agriculture Processing and Food Engineering, Indira Gandhi Krishi Vishwavidyalaya, Raipur 492 006, India.
- [9] Mathanghi et al. Functional and phytochemical properties of finger millet for health. *IJPCBS* 2012,2(4), 431-438. Faculty of Food Sciences, College of Food and Dairy Technology, Tanuvas, Koduvalli, Chennai, Tamilnadu, India.
- [10] Finger Millet (Ragi, Eleusine coracana L.): A Review of Its Nutritional Properties, Processing, and Plausible Health Benefits. Volume 69, 2013, Pages 1-39.