

TIGER NUTS: A HEALTHIER PSEUDO - NUT OF ALL NUTS IN THE TROPICS

OWUSU NYARKO RICHARD¹, OWUSU BOATENG PAUL²

¹MDS student, Doctor of Medicine & Surgery, Donetsk National Medical University, Kirovograd, Ukraine.

² MBBS Student, Liaoning medical university, China.

Abstract: Tiger nuts are one of nature's super foods. They are high in fiber, highly nutritious and are believed to contain ingredients that can help prevent heart attacks and improve blood circulation. People in North Africa and Spain have been snacking on tiger nuts for centuries, served raw or ground into flour for baking, they are not actually nuts, but tubers of a grass-like plant called the yellow nuts edge. High in iron, potassium, magnesium and Vitamins C and E, they taste sweet, with a hint of coconut, and have a chewy texture. It is a super food, especially with their nutrient profile almost mirroring that of human breast milk, and the fact that they are gluten-free and nut-free makes them a wonderful alternative and healthy choice.

Key Words: Fiber, tiger nuts, organic food, vitamins, lactose intolerance, protein, blood sugar, blood pressure.

1.0 INTRODUCTION:

Tiger nuts are widely known and very popular for carp fishing. These originally African groundnuts are grown in West Africa. They are mainly grown for the Spanish market, where they are used to make tiger nut milk (Horchata). Tiger nuts grow underground and the plant itself looks grassy. The nuts are planted in April and harvested in November and December. Tiger nuts can rightly be regarded as the world's first super food, as they were what our ancient ancestors' used to eat, in Africa.

In fact, they made up 80 per cent of the diet of Nutcracker Man, who lived two million years ago, according to research published by Oxford University. And their popularity today is being fuelled by followers of the fashionable Paleo, or caveman diet. In Spain, where tiger nuts are known as chufa and are grown in the Valencia region, they are used to make the popular drink, Horchata. Fishermen also use them as bait, particularly for carp.

2.0 METHOD:

Sample research where taken from scientific data from other works done and published in peer reviewed journals. They were analysed, criticized constructively, appraised and some which the writers deem fit was taken as a reference on this work. Stratified and probity of empirical data and cross sectional surveys done on the subject matter was also revised by the authors in bringing out the final write up.

3.0 DISCUSSION:

Tiger nuts are also said to act as a mild appetite suppressant because they contain resistant starch, a type of starch which resists digestion.

This helps keep us feeling fuller for longer, and also reduces the amount of calories we absorb from the food. Resistant starch is also a prebiotic, which helps our bodies to naturally develop probiotic (friendly) bacteria ensuring a strong immune system.

Essentials of Tiger Nuts

a. Allergen free – Tiger nut allergies are probably one of the rarest food allergies ever. Since they are a tuber, tiger nuts are completely soy, dairy, grain, nut, seed (etc, etc.) free. Further, Organic Gemini has a dedicated gluten-free, peanut-free and tree nut-free facility to prevent cross-contamination.

b. Resistant Starch – Tiger nuts are the highest whole food source of a unique type of fiber called resistant starch. Besides the pleasant flavor and texture, the resistant starch content is why I eat tiger nuts on a regular basis. Resistant starch is a highly beneficial pre-biotic, which means it feeds the good bacteria in your digestive tract.

Resistant starch has been a hot topic lately in the health world as more and more research shows the unique benefits of this plant fiber. For example, research indicates that resistant starch could be a powerful component in preventing and or addressing diabetes and obesity. Introducing resistant starch for the first time may produce some symptoms of a shift in gut flora. You may wish to introduce tiger nuts gradually and see if you experience symptoms such as gas or bloating. If you do, slowly but consistently increase the amount of tiger nuts starting at just one or two a day.

c. Healthful Fats – Unlike other starchy vegetable tubers such as potatoes, tiger nuts are a good source of healthful fats. Tiger nuts have a fatty acid composition similar to olive oil, with the fat composition being about 73% monounsaturated fat, 18% saturated fat and 9% polyunsaturated fat (source). The lower percentage of polyunsaturated fat, which can be highly inflammatory, in contrast to the specific monounsaturated and saturated fats (both nourishing, non-inflammatory types of fat) makes a healthy fat profile

d. Contain a High Load of Antioxidants

In the body, free-flowing oxygen molecules can create free radicals, otherwise known as oxidative damage. This damage can eventually lead to diseases, such as heart disease and cancer.

It's important to have a diet rich in antioxidants to protect the human digestive system from oxidative damage over time, and tiger nuts are a great source of antioxidants. With high vitamin E content and oleic acid, these "nuts" help protect the body from disease.

Certain preparation styles change the antioxidant properties of tiger nuts, although they're all be beneficial to human life. For example, when preparing horchata, using germinated tiger nuts helps retain higher antioxidant content than using fresh tiger nuts.

e. Provide a Great Source of fiber

One serving of tiger nuts has a whopping 10 grams of fiber, providing you with almost half of your daily requirement. Fiber is an important, if misunderstood, part of nutrition. When it isn't absorbed by your digestive system, it passes through your system, capturing toxins, waste, fat and cholesterol particles and expelling them from your system.

Fiber helps you consistently feel full, maintain digestive health, prevent heart disease, lose weight and prevent diabetes. That's good news for tiger nut fans, considering they contain more fiber per serving than many other recommended high-fiber foods, like quinoa or chia seeds.

f. Hold Antibacterial Properties

Another tiger nut benefit is the ability to fight bacteria in the human body. One study published in *Ancient Science of Life* found extracts of *Cyperus esculentus* actually had bacteria-fighting effects on several dangerous human pathogens, including salmonella and E coli. *Cyperus esculentus* is also on a list of several dietary plants that can be used against common bacterial infections, especially for those who have developed antibiotic resistance in third-world countries.

Wherever you live, it's important to fill your diet with immune system boosters like tiger nuts. Bacteria-fighting food helps you fight off infections and viruses so don't neglect this important part of nutrition.

g. Work as a Prebiotic

While tiger nuts help fight bad bacteria in your body, they also assist your digestive tract by acting as a “resistant starch” prebiotic. Prebiotics function by serving as energy sources (As a fuel of sorts) for the positive gut bacteria that keep your entire digestive system running smoothly. Because a rapid shift in gut microflora can temporarily upset your stomach, it’s a good idea to introduce “resistant starch” prebiotics into your diet gradually. This can help you avoid any temporary gas or bloating you could experience otherwise. Eaten in good, healthy doses, tiger nuts have also been known to relieve flatulence and diarrhea, so you shouldn’t be too worried about brief bloating.

h. Control Diabetes

Tiger nuts may be a great addition to your snack cupboard. The insoluble fiber in these tubers helps control blood sugar levels, as it’s a type of carbohydrate that doesn’t raise blood sugar.

A 2015 study published in the Journal of Pharmacy & Bioallied Sciences looked at the effects of *Cyperus rotundus*, which has many similar antioxidant capabilities that the tiger nut has, on diabetic mice. After three weeks researchers found that the treatment indicated it shows anti diabetic effects. This shows positive signs for the tiger nut working as a diabetes treatment.

i. Lower Bad Cholesterol

Even though there is a lot of misinformation out there about good and bad cholesterol, it’s still important to maintain healthy levels of each. Tiger nuts have been proven to lower levels of LDL cholesterol and balance cholesterol levels by absorbing it better due to the fiber content.

j. Improve Your Sex Life

A preliminary 2015 study looked at how the consumption of tiger nuts affected the male copulatory behavior in rats. The results of the study showed tiger nuts improved the sex performance of the rats, inferring a possible benefit to human male sexual performance as well. Among other factors, the rats showed briefer intermission times and heightened testosterone levels.

4.0 ANALYSIS:

4.1 Tiger Nuts Nutrition Facts

One serving of tiger nuts (one ounce or 30 grams) contains about: (12)

120 calories

19 grams carbohydrates

2 grams protein

7 grams fat

10 grams fiber

1.8 milligrams iron (10 percent DV)

28 milligrams magnesium (7 percent DV)

1.1 milligrams zinc (7 percent DV)

215 milligrams potassium (6 percent DV)

0.1 milligrams vitamin B6 (5 percent DV)

4.2 Use as healthy oil for consumption

Another one of health benefits of tiger nuts is they contain the healthy oils that are very similar to olive oil. The oil extracted from tiger nuts consists of around 80% unsaturated fats and only 18% of the cholesterol causing saturated fat.

4.3 Use as biofuel

There is a global search for alternative sources of fuel which could be cheaper, safer, and more environmentally friendly in comparison with widely used burning fuels. Since the tubers of tiger nuts contain 20 - 36% oil, it has been suggested as potential oil crop for the production of biodiesel. One study found that chufa produced 1.5 metric tons of oil per hectare (174 gallons/acre) based on a tuber yield of 5.67 t/ha and an oil content of 26.4%. A similar 6-year study found tuber yields ranging from 4.02 to 6.75 t/ha, with average oil content of 26.5% and average oil yield of 1.47 t/ha.

4.4 Use in medicine and cosmetic industry

As a source of oils, the tubers were used in pharmacy under the Latin name *bulbuli thراسي* beginning no later than the end of 18th century. In ayurvedic medicine tiger nuts are used in the treatment of flatulence, diarrhoea, dysentery, debility and indigestion. Tiger nut oil can be used in the cosmetic industry. As it is antioxidant (because of its high content in vitamin E) it helps slow down the ageing of the body cells. It favours the elasticity of the skin and reduces skin wrinkles. Tiger nuts are also a good source of the antioxidant, Vitamin E, which helps to protect against the damage caused by free radicals in the body. By protecting the body against free radicals, Vitamin E can help prevent both cancer and coronary diseases, as well as slow down the onset of the signs of ageing.

5.0 FINDINGS:

Oxford University recently discovered that tiger nuts played a key nutritional role in our evolution from pre-human to human.

Tiger nuts; Health benefits

1. **Tiger nuts have been found to correct erectile dysfunction, E.D:** tiger nuts are potent stimulant for the production of male sex hormones, they improve male virility. Although much research work is needed to put it out, Africans, especially Ghanaian men have been using this traditional nut for decades in the form of palliative for treating feeble erections.
2. **Richer in fiber:** tiger nuts are packed with high fiber. Tiger nuts are a very rich source of dietary fiber. Over 30% of a tiger nut is made of fiber and that's more than oats, bran and most vegetables and fruits. We all need fiber to keep our digestive system in good working order, and it can also be an aid to weight loss, by making you feel fuller for longer.
In a study by the university of Miguel Hernandez, Orihuela, Spain, it was found that 100g flour made of tiger nuts contains about 60g dietary fiber. This is much higher than other popular fiber sources like rice bran, oats, apple, cabbage, carrots, pears etc.
3. **Healthy substitute in lactose intolerance;** milk derived from tiger nuts is healthy option for those who cannot drink cow's milk due to lactose intolerance. Tiger nut milk contains no lactose but plenty of calcium, so it makes a great alternative to cow's milk, for people who are lactose intolerant.
4. **Higher magnesium value;** according to the office dietary supplements, magnesium is vital for the normal functioning of the body. It is needed for over 300 biochemical reactions in the body.
Tiger nuts are a good natural source of magnesium, which is needed by the body to help with muscle and nerve function and for the proper functioning of the immune system. Magnesium also helps to regulate the heart beat and maintain healthy blood pressure levels. Recent studies show that 100g flour of tiger nuts contain about 15 percent of magnesium. This substance helps to promote normal nerve and muscle function, regulates sugar, maintains normal blood pressure, strengthens bones, processes proteins and keep you healthy.

5. **Plentiful Arginine:** tiger nuts are also loaded with substances called amino acids, especially arginine. The mayo foundation suggests arginine keep blood vessels open to normal blood flow. Arginine helps in caring for narrowed blood vessels. Examples are clogged arteries, chest pain, heart disease artery diseases, muscle cramps and headaches. They help to control blood pressure. Its wonderful health benefits of tiger nuts which have been shown to be beneficial to those suffering with high blood pressure. Arginine has been clinically proven to reduce blood pressure.
6. **Digestion;** tiger nuts have many nutritional and health benefits, which make them an amazing food for anyone. Traditionally, tiger nuts were used to treat stomach upsets and other digestive issues. They have been used in folk medicines as remedy for diarrhoea and flatulence.
7. **Tiger Nuts are rich in prebiotic fiber.** Prebiotics act as food for your body's natural organisms. They help your gut's natural probiotics thrive. A single ounce of TigerNuts has 40% of our daily recommended fiber
8. **A good source of vitamins:** Recent studies have found that tiger nuts are brimming with vitamins and minerals. They are a superb source of Vitamins C and E and the minerals, such as potassium and phosphorus. Some yoghurt is now being made with added tiger nut milk, to boost their nutritional content.
9. **They help regulate blood sugar levels;** another one of great health benefits of tiger nuts is that they help regulate blood sugar levels. The insoluble fiber found in tiger nuts can be of great help to diabetics. Insoluble fiber is important to diabetics, because, unlike other carbohydrates, it does not cause peaks and troughs in the blood sugar levels.
10. **Tiger nuts are so nutritious;** they are being used to fight malnutrition; Tiger nuts are so packed with nutritional goodness that they are being considered as an alternative staple food in some developing countries. A study in Egypt found that tiger nuts are more nutritious and less expensive, than some other staple foods.
11. **They are a rich source of protein:** Protein is a vital ingredient used in the building of muscle, skin and bone, and tiger nuts provide a rich source of protein. Tiger nuts are in fact one of the best non - meat sources of protein.

6.0 RESULTS:

Nutritional value of Tiger Nuts

Despite its name, tiger nuts edge is a tuber. However, its chemical composition shares characteristics with tubers and with nuts. It has been reported to be a health food, since its consumption can help prevent heart disease and thrombosis and is said to activate blood circulation and reduce the risk of colon cancer. This tuber is rich in energy content (starch, fat, sugar, and protein), minerals (mainly phosphorus and potassium), and vitamins E and C.

Tiger nut tubers contain almost twice the quantity of starch as potato or sweet potato tubers. The oil of the tuber was found to contain 18% saturated (palmitic acid and stearic acid) and 82% unsaturated (oleic acid and linoleic acid) fatty acids. The moderately high content of phytosterols further enriches the quality and value of tiger nut oil as a food source.

7.0 RECOMMENDATION:

The writers think much funding should be given to tiger nut research in other to help generate viable and rapid matured species that can thrive everywhere in the world for easy find and consumption.

Also much attention and awareness should be given to these foods by nutrition and diet experts to help humans increase its consumption and enjoy its enormous health values. It is time tiger nuts be hyped like apples, grapes, oranges etc that are commonly found at the markets, malls, way side shops etc.

7.0 CONCLUSION:

The tiger nut is not part of the nut family and is completely safe for people with any sort of nut allergies. Tiger nuts are package of complete food. Their inclusion in your regular diet is sure to help you keep healthy and fit. Its fiber content will help cut down the rate of obesity since it easier to make ones stomach full and aids complete digestion there by preventing slow metabolic rate in humans.

REFERENCES:

1. Professor Lade wosornu: tiger nuts health benefits 2, page 6 of Ghanaian times, November 5, 2016.
2. Dr. Josh Axe, Tiger Nuts: The Antibacterial, Fiber-Packed ‘Nut’ May Even Boost Your Sex Life, <https://draxe.com/tiger-nuts/february> 8, 2016.
3. Sánchez-Zapata, E; Fernández-López, J; Angel Pérez-Alvarez, J (2012). Tiger Nut (*Cyperus esculentus*) Commercialization: Health Aspects, Composition, Properties, and Food Applications, *Comprehensive Reviews in Food Science and Food Safety*. 11: 366–77. doi:10.1111/j.1541-4337.2012.00190.x.
4. Macho, G. A. (2014): Hardy, Karen, ed. Baboon Feeding Ecology Informs the Dietary Niche of *Paranthropus boisei* PLoS ONE. 9: e84942. doi:10.1371/journal.pone.0084942. PMC 3885648 Freely accessible PMID 24416315.
5. Abano, E.E. Amoah, K.K. (2011) Effect of moisture content on the physical properties of tiger nut (*Cyperus esculentus*) *Asian Journal of Agricultural Research*. 5: 56–66. doi:10.3923/ajar.2011.56.66.
6. Physical and chemical properties of chufa (*Cyperus esculentus* L) tubers grown in the cukurova region of Turkey , *Journal of the Science of Food and Agriculture*. 82: 625–631. doi:10.1002/jsfa.1091.
7. Consejo Regulador de Chufa de Valencia : [Chufadevalencia.org](http://chufadevalencia.org). 2002-12-31. Retrieved 2012-06-05
8. Belewu, MA; Abodunrin, OA (2008). Preparation of Kunnu from Unexploited Rich Food Source: Tiger Nut (*Cyperus esculentus*) *Pakistan Journal of Nutrition*. 7: 109–11. doi:10.3923/pjn.2008.109.111.
9. Arafat S, Gaafar A, Basuny A, Nassef L (2009) : Chufa Tubers (*Cyperus esculentus* L.): As a New Source of Food. *World Applied Sciences Journal* 7: 151–6.
10. Yellow nut- sedge tuber oil as a fuel *Industrial Crops and Products* 5: 177–181. doi :10.1016/0926-6690(96)89446-5.
11. Makareviciene et al: Opportunities for the use of chufa sedge in biodiesel production, *Industrial Crops and Products*, 50 (2013) p. 635.

WEB REFERENCES:

<http://empoweredsustenance.com/tigernuts-nutrition/>

<http://www.dailymail.co.uk/health/article-3178049/Tiger-nuts-grr-eat-Popular-1950s-treat-make-comeback-superfood-high-iron-vitamin-content.html#ixzz4TMDTZXNU>