

## **Biogenic Nutrition & The Health Benefits of Sprouts**



Fiona Tuck

Nutritional Medicine Practitioner

Member of the Australian Traditional Medicine Society

# Biogenic Nutrition

- ❖ **Biogenic:** cell-renewal, life generating – germinated seeds, nuts, legumes, sprouted baby greens.
- ❖ **Bioactive:** life sustaining – organic, fresh fruit and vegetables.
- ❖ **Biostatic:** life processes slow down, aging processes accelerate (cooked, stale foods).
- ❖ **Biocidic:** life destroying – processed, irradiated foods and drinks.



# Sprout Health Benefits

Sprouts are loaded with nutrients and phytochemicals which have may have important health benefits.

Some of these nutraceuticals are:

- ❖ **Phyto estrogens:** Hot flashes, menopause, osteoporosis, PMS.
- ❖ **Anti-oxidants:** Slow-aging, vitamin C, polyphenols.
- ❖ **Minerals:** Sulphur, zinc, manganese, iodine, potassium, iron, selenium.
- ❖ **Bio-flavonoids:** Antioxidant and anti-inflammatory.
- ❖ **Quercetin:** Anti-inflammatory, anti-histamine
- ❖ **Carotenes:** Over 600 different carotenoids.
- ❖ **Indoles:** Anti-inflammatory, precursor to neurotransmitters serotonin, melatonin.
- ❖ **Sulphurophanes:** May protect against cancer and inflammation.
- ❖ **Phytosterols:** Cardiovascular disease. Lowers total cholesterol, triglycerides, LDL.
- ❖ **Saponins:** Reduce LDL cholesterol.



**Nutritional Value of Sprouts**

Raw Sprouts (1 cup)	Calories	Protein (grams)	Fiber ( % )	Vitamin C ( Daily Value )	Iron	Folate
Alfalfa	10	1.3	3	5	2	3
Mung Bean	26	2.5	4	23	4	9
Radish	16	1.4	n/a	18	2	9
Soybean	86	9.0	3	17	8	30
Wheat	214	8.0	4	5	11	10

(Source: U.S. Department of Agriculture)

# Easier to Digest

- ❖ **Anti-nutrients** also have the job of keeping a seed from sprouting until it's ripe enough and ready to mature.
- ❖ **Phytic acid** also inhibits our digestive enzymes called amylase, trypsin and pepsin. Amylase breaks down starch, while both pepsin and trypsin are needed to break down protein into smaller amino acids.

In addition to phytic acid, other forms of compounds similar to antinutrients can also be found in unsprouted foods. These include the antinutrients called:

- ❖ **Enzyme inhibitors:** These are found in plant foods and prevent adequate digestion. They can cause protein deficiency and gastrointestinal upset. Tannins are enzyme inhibitors. So are other difficult-to-digest plant proteins like gluten. Enzyme inhibitors not only cause digestive problems, but they can contribute to allergic reactions and mental illness.
- ❖ **Lectins:** Lectins are particularly resistant to digestion by humans. They enter our blood and trigger immune responses. Lectins can cause GI upset similar to classical food poisoning and immune responses like joint pain and rashes. Improperly prepared raw grains, dairy and legumes like peanuts and soybeans have especially high lectin levels.





# Increases Protein Availability

- ❖ Depending on the exact seed that is sprouted, **proteins in the form of amino acids can become more concentrated and absorbable in sprouted foods.** Some studies have shown that an increase in amino acids, including lysine and tryptophan, takes place when seeds are sprouted. The protein gluten can also decrease in grains when sprouted.
- ❖ While the concentration of different proteins in sprouted foods seems to vary, most studies **indicate that proteins become more digestible** when the seeds are sprouted. When a seed begins to sprout, natural chemical changes take place. As a result, enzymes are produced to convert nutrients for the growing plant to utilize. As sprouting continues, complex proteins are converted into simple amino acids, making them easier on digestion.
- ❖ **Good sources: Sprouted lentils, soy beans, mung beans, adzuki beans, and peas.**



# Increases Fibre Content

- ❖ Several studies have found that **when seeds are sprouted, their fibre content increases** and becomes more available. Reports show that sprouting increases concentrations of crude fibre, which is the fibre that makes up the cell walls of plants. When we consume plant's crude fibre, the fibre cannot actually be absorbed within our digestive tracts. Therefore it helps push waste and toxins out of the gut and regulate bowel movements.
- ❖ It's possible that because sprouted seeds offer more bioavailable protein and fibre, **they may lead you to feel fuller**. Increased satiety after eating sprouts can potentially help with curbing your appetite and portion control.



# May Increase Enzymes and Antioxidants

- ❖ According to a 2013 study, sprouting legume seeds can **increase their nutritive value by raising phenolic and flavonoid antioxidant levels**. When researchers sprouted the seeds, antioxidant levels significantly increased and improved free radical scavenging and anticancer activities when compared to the seeds that had not been sprouted.



# Broccoli Sprouts, The Trending Sprout...

- ❖ Cancer fighting compound called **Sulphurophanes**: Protective Enzymes may inhibit tumour growth
- ❖ **Up to 100 times higher concentrations of glucoraphanin** than in mature broccoli
- ❖ 1 lb of sprouts = 100 lbs of broccoli
- ❖ Sulforaphane has antioxidant, antimicrobial, anticancer, anti-inflammatory, anti-aging, neuroprotective, and anti-diabetic properties
- ❖ Sulforaphane also protects against cardiovascular and neurodegenerative diseases





# How to use them...

❖ Salads

❖ Sandwiches

❖ Omelettes

❖ Stir fries

❖ Soups and Stews

❖ Garnish



# Sprout Benefits

Benefits of sprouts/sprouting seeds include:

- ❖ Increasing nutrient absorption
- ❖ Making seeds easier to digest
- ❖ Increasing availability of fibre and protein
- ❖ Lowering anti-nutrient content
- ❖ Reducing presence of allergens
- ❖ Increasing enzyme and antioxidant content



**In closing...**



**Eat more sprouts!**



# References

- ❖ **Ndb.nal.usda.gov.** (2019). USDA Food Composition Databases. [online] Available at: <https://ndb.nal.usda.gov/ndb/> [Accessed 2 Apr. 2019].
- ❖ **Chung TY, e. (2019).** Compositional and digestibility changes in sprouted barley and canola seeds. - PubMed - NCBI. [online] Ncbi.nlm.nih.gov. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/2608636> [Accessed 22 Mar. 2019].
- ❖ **Dr. Axe. (2019).** Sprout Guide: How to Sprout Grains, Nuts & Beans – Dr. Axe. [online] Available at: <https://draxe.com/sprout/> [Accessed 21 Mar. 2019].
- ❖ **Khang, D., Dung, T., Elzaawely, A. and Xuan, T. (2019).** Phenolic Profiles and Antioxidant Activity of Germinated Legumes.
- ❖ **Yanaka, A. (2019).** Daily intake of broccoli sprouts normalizes bowel habits in human healthy subjects.
- ❖ **Su, X., Jiang, X., Meng, L., Dong, X., Shen, Y. and Xin, Y. (2019).** Anticancer Activity of Sulforaphane: The Epigenetic Mechanisms and the Nrf2 Signaling Pathway.
- ❖ **Nagel, R. (2019).** Living With Phytic Acid - The Weston A. Price Foundation. [online] The Weston A. Price Foundation. Available at: <https://www.westonaprice.org/health-topics/vegetarianism-and-plant-foods/living-with-phytic-acid/> [Accessed 2 Mar. 2019].
- ❖ **Gupta, R., Gangoliya, S. and Singh, N. (2019).** Reduction of phytic acid and enhancement of bioavailable micronutrients in food grains.

