Why Is **Spirulina** a Superfood?

螺旋藻：神奇的“超级食品”

Spirulina is a kind of blue-green algae. It grows in both fresh and salt water. Just like plants, spirulina can produce energy out of sunlight through photosynthesis.

Historically, spirulina was used as one of the main sources of protein by the Aztecs in the 16th century. It became popular again more recently when NASA conducted studies on spirulina as a potential food for space travel. The goal was to provide astronauts with foods that are rich in nutrients but compact in size. NASA found that 1 kg of spirulina had the same nutrients found in about 1,000 kg of assorted vegetables.

It is amazing how nutritious spirulina is. This nutritional powerhouse is rich in vitamins, minerals, protein, essential fatty acids, and more:

- **Protein:** Spirulina is 65-70% protein (more than meat!) of which 95% is digestible. The quality of the protein in spirulina is considered excellent, comparable to eggs. It contains all the essential amino acids that we need, making it a complete protein.
- **Carotene:** 25 times more than carrots; 50 times more than spinach.
- **Vitamin E:** 3 times more than wheat germ.
- **Vitamins B:** Highest whole food source of Vitamin B12 and B Complex; one heaped dessertspoon (approximately 12 g) of spirulina powder provides over 500% of the US RDA of Vitamin B12, 21% of Vitamin B2 (Riboflavin), 21% of Vitamin B1 (Thiamin) and 7% of Vitamin B3 (Niacin).
- **Iron:** 2-6 times higher in iron than beef liver; 300% more iron than steak.
- Loaded with more than 14 **organic minerals** which are highly bioavailable, like calcium, magnesium, potassium, chromium and other trace minerals.
- Contains more **antioxidants** than any other whole food.
- Richer in **chlorophyll** than alfalfa or wheat grass, making spirulina an incredible alkalizer and blood purifier.
- Rich in **Glycogen**. When energy is needed, glycogen is quickly mobilized to deliver the body with fuel that it needs. Spirulina is the only known vegetable that contains glycogen.
- **Healthy Fat:** Today, the typical modern diet consists of 14 to 25 times more Omega 6 than Omega 3. Researchers believe that this imbalance of Omega 3:6 is causing an inflammatory response in the body, and inflammation is a root cause of numerous diseases and disorders. Spirulina contains both omega-6 and omega-3 fatty acids in a ratio of about 1.5:1. Besides, it gives 3 times more Gamma Linolenic Acid (GLA) than Evening Primrose Oil (EPO). GLA has reportedly shown to be effective in strengthening the body's immune system.
- Good source of **natural enzymes**.

螺旋藻也被称为蓝绿藻。它可生长在淡水或咸水中。与植物一样，螺旋藻能够通过光合作用产生能量。

据历史记载，螺旋藻早在16世纪已是阿兹台克人的主要蛋白质来源之一。后来由于美国国家航空航天局（NASA）对螺旋藻进行研究，评估它具有成为太空食物的潜力，因而再次流行起来。研究的目标是为宇航员提供营养丰富但体积小的食品。NASA发现，1公斤螺旋藻的营养成分竟与1000公斤重的各种蔬菜所提供的营养成分相同。

无可置疑，螺旋藻真是个神奇的营养健康食品。它含有丰富的维生素、矿物质、蛋白质、必需脂肪酸等等：

- **蛋白质**：螺旋藻当中有65-70%是蛋白质（比肉类还多），其中95%的蛋白质属于易消化蛋白质。螺旋藻中的蛋白质质量优越，可与鸡蛋媲美。螺旋藻包含我们身体所需的所有必需氨基酸，是个完整蛋白质的最佳来源。
- **胡萝卜素**：比红萝卜高出25倍；比菠菜更高出50倍。
- **维生素E**：比小麦胚芽高出3倍。
- **维生素B**：是维生素B12和B群维生素的最佳食物来源；一茶匙（大约12克）的螺旋藻粉所提供的成份比美国的每日推荐量来得多，比如维生素B12多出500%、维生素B2（核黄素）多出21%、维生素B1（硫胺素）多出21%及维生素B3（烟碱酸）多出7%。
- **铁**：比牛肝中的含铁量高出2-6倍；比牛排含铁量更高出300%。
- 含有超过14种生物可利用的**有机矿物质**，如钙、镁、钾、铬及其他微量矿物质。
- 比其他所有食物含有更多的**抗氧化剂**。
- 比苜蓿芽或小麦草含有更丰富的**叶绿素**，因此螺旋藻是食源中非凡的碱化剂和血液净化剂。
- 富含**糖原**。当身体需要能量时，糖原会被激活，运送燃料以供身体所需。螺旋藻是唯一含有糖原的植物。
- **健康脂肪**：现今大部分的人的饮食中所摄取的奥美加-6含量是奥美加-3的14至25倍。研究人员相信，奥美加-3与奥美加-6的比例不平衡将会引起炎症反应，而炎症正是许多疾病的罪魁祸首。螺旋藻含有的奥美加-6和奥美加-3脂肪酸比例十分理想，即1.5比1。此外，它比月见草油（EPO）含有3倍更多的伽玛亚麻酸（GLA）。研究显示，GLA有效增强人体的免疫系统。
- **天然酶**的良好来源。

Gram for gram, spirulina may literally be the single most nutrient-dense food on earth. It is low in calories however, with 1 tablespoon of spirulina containing only 20 calories and 1.7 grams of digestible carbohydrate.

Besides being considered as the richest, most nutrient-dense food sources known to man, spirulina has been well-researched for its many tremendous health benefits. These include:

1. **Antioxidant powerhouse.** Spirulina contains a rare antioxidant compound known as phycocyanin which helps protect cells from oxidative damage. Oxidative damage can drive chronic inflammation, which contributes to cancer and other diseases.

2. **Lowers blood pressure.** Spirulina can increase the production of nitric oxide, a signalling molecule that helps the blood vessels relax and dilate, which may help to lower blood pressure levels. High blood pressure is a serious cause of many killer diseases. These include heart attacks, strokes and chronic kidney disease.

3. **Reduces cholesterol.** Studies have shown that spirulina can lower triglycerides and LDL cholesterol, and may raise HDL, "good", cholesterol levels.

4. **Protects LDL cholesterol from oxidative damage.** Fatty structures in the body can become oxidized, known as lipid peroxidation, which promotes the progression of many serious diseases. The antioxidants in spirulina appear to be particularly effective at reducing lipid peroxidation.

5. **Increases oxygen in the blood.** Cells that have optimum oxygen levels will give us more energy, enhance brain function, and lower stress. Oxygenated cells help the body overcome fatigue and maintain a youthful appearance. Poor blood oxygenation deprives the cells of energy to clean and rebuild. As a result, our immune system weakens, which can lead to viral infections, DNA mutations, pathogenic bacteria, inflammation, heart disease, toxic build-up in blood, and premature aging. Poor blood oxygenation is the number one cause of declining health and disease! Spirulina stimulates the production of various stem cells including red blood cells which help to supply oxygen while keeping the blood clean.

6. **Improves sinus issues.** Studies have shown that spirulina benefits the body by reducing the inflammation that causes people to experience sinus problems. It is very effective at reducing various symptoms like nasal discharge, sneezing, nasal congestion and itching.

7. **Increases haemoglobin.** The most common form of anaemia is characterized by a reduction in haemoglobin or red blood cells in the blood. It is fairly common in the elderly, and may lead to prolonged feelings of weakness and fatigue. One study showed that spirulina supplementation increased haemoglobin in the body. Immune function also improved.

8. **Promotes healthy gut.** Spirulina promotes the growth of healthy bacterial flora in the intestines, which can help the body eliminate candida cells as well as support the immune system.

9. **Helps control blood sugar.**

10. **Detoxifies heavy metals** (especially arsenic) from the body.

11. **Boosts energy and improves endurance.**

12. Offers **neuroprotection** for brain disorders and memory failure.

"With its array of research-backed health benefits, Spirulina is a true "superfood", and one of the few that actually lives up to the term."

一克对一克，螺旋藻所提供的营养是食品界中最高的。但它的热量却又非常低，1汤匙的螺旋藻只含有20卡路里及1.7克的可消化碳水化合物。

除了是人类最营养丰富的食源之外，螺旋藻还提供许多健康效益。这些效益都经广泛的研究支持与验证，其中包括：

1. **丰富的抗氧化剂**。螺旋藻含有一种罕见的抗氧化化合物——藻青素，可帮助保护细胞免受氧化损害。氧化损害会致使身体引发慢性发炎，进而导致癌症和其他疾病。

2. **降低血压**。螺旋藻可增加一氧化氮的生成。一氧化氮是一种重要的分子信号，可帮助血管放松和扩张，降低血压。高血压是许多致病性疾病的严重根源。这包括心脏病、中风和慢性肾病。

3. **降低胆固醇**。研究显示，螺旋藻可降低三酸甘油酯和低密度脂蛋白胆固醇，相反的它可提高高密度脂蛋白胆固醇（好的胆固醇）。

4. **保卫低密度脂蛋白胆固醇免受氧化损害**。脂质过氧化是指人体内脂肪结构的氧化变质。这过程会促成许多严重疾病的进展。螺旋藻中的抗氧化剂对降低脂质过氧化特别有效。

5. **增加血液中的氧气**。充满氧气的细胞不但能提供身体更多的能量，还能增强大脑功能和降压。此外，我们也不会容易觉得疲倦，反而觉得自己更年轻、有活力。血缺氧会导致细胞无法获得充分的必需营养素以提供身体足够的能量进行净化与重建。结果，免疫系统削弱，导致病毒感染、基因突变、致病菌增生、发炎、心脏病、血液中毒素堆积及过早老化等。因此血缺氧是健康衰退和疾病发生的首因！螺旋藻能刺激各种干细胞的产生，包括红血球，将更多的氧气输送到身体各个细胞，帮助净化血液。

6. **改善鼻窦炎**。研究显示，螺旋藻可减少身体的发炎反应，从而改善鼻窦炎。它能有效减轻鼻分泌物、打喷嚏、鼻塞和瘙痒等各种症状。

7. **增加血红蛋白**。血液中的血红蛋白或红血球减少是造成贫血症的常因。普遍发生在老年人身上，因而长期感觉疲劳和虚弱。研究显示，补充螺旋藻可增加身体中的血红蛋白及改善免疫功能。

8. **促进肠道的健康**。螺旋藻可促进肠道内健康菌群的生长，有助身体消除念珠菌细胞及维持免疫系统功能。

9. **帮助控制血糖**。

10. **排除体内重金属（特别是砒霜）**。

11. **增加能量和提高耐力**。

12. 为大脑疾病和记忆力衰竭提供**神经保护**。

螺旋藻所提供的健康效益极为广泛，亦经研究支持，誉有"神奇超级食品"之称是实至名归。

Who will benefit from Spirulina?

- People with poor digestion and assimilation (spirulina is easy to digest and absorb)
- People with poor vitality and anaemia
- People who eat refined or processed foods regularly
- People who take prescription drugs (spirulina protects the kidneys and liver)
- People who are overweight or obese
- People who engage in physical exercise / strength training
- People with low energy levels
- Vegetarians, as it contains a wholesome source of essential nutrients like protein and B12 which are normally found in meat
- Children, women, pregnant and nursing mothers and the elderly

适宜人群：

- 消化吸收不良者（螺旋藻容易被身体消化和吸收）
- 缺乏活力和贫血者
- 经常摄取精制或加工食品的人士
- 服用处方药患者（螺旋藻可保护肾脏和肝脏）
- 超重或痴肥者
- 从事体能训练者
- 精力不足者
- 素食者。它含有整全的营养物质，如蛋白质和维生素B12（通常取自于肉类）。
- 儿童、妇女、孕妇、喂乳妈妈和老年人

Spirulina vs Chlorella.

They are often lumped together as if they were one and the same. Although they are both microalgae, there are a few key differences you need to know before choosing to add either to your dietary supplement routine.

1. **How they are grown**

Spirulina thrives in clean high-alkaline water. The water must be clean and sourced from natural rivers and lakes. It also needs an abundance of sunshine and moderate temperatures. It grows best by itself in water uncontaminated by other kinds of living organisms. Thus, harvesting is straightforward.

Chlorella also grows in fresh water, but it likes to have neighbours (other organisms) in the water. Due to its microscopic size, it is difficult to cultivate and harvest for mass production.

2. **Digestibility**

Because of its hard, indigestible cell wall, chlorella needs mechanical processing to prepare it for human consumption. Otherwise, the body would not be able to digest and absorb its nutrients. The process can be costly, which would explain why chlorella is usually more expensive than spirulina.

On the other hand, spirulina has a completely digestible cell wall and can be immediately consumed and digested easily.

3. **Nutritional value**

Although both are considered superfoods, spirulina and chlorella differ in their nutritional content. Spirulina contains more essential amino acids, iron, protein, B vitamins, and vitamins C, D and E. Spirulina is also a better source of GLA, a good fat that is essential for healthy brain and heart function.

螺旋藻与绿藻的比较

螺旋藻和绿藻常常被混为一谈。虽然它们都属于微藻类，仍有不同之处。因而在选择摄取前必须要知道以下几个重点。

1. **生长环境**

螺旋澡生长在干净、高碱性水中。水源必须来自天然、清澈的河流或湖泊。它还需要充足的阳光和适中的温度。不受其他生物污染的生活环境最适宜螺旋藻的健康茁长。因此，采收过程不复杂。

绿藻也生长在清澈的水中，但它喜欢有其他微生物做邻居的环境。此外，由于它体积十分微小，因此很难进行大规模的培植与采收。

2. **消化性**

由于绿藻的细胞壁坚硬和不容易被身体消化，因此需要经过机械加工才适合被服用。否则，身体无法消化和吸收营养。这过程相当昂贵，因而可以解释为什么绿藻的价格往往都比螺旋藻来得昂贵。

反之，螺旋藻的细胞壁可完全被消化，因而可在服用后，即时被身体消化吸收。

3. **营养价值**

虽然两者都被认为是超级食品，但螺旋藻和绿藻在营养含量上仍有差别。螺旋藻含有更多的必需氨基酸、铁、蛋白质、B群维生素、维生素C、D和E。螺旋藻也是提供GLA的更好选择，其良好的脂肪有益于大脑和心脏的健康功能。