

It tastes like pine nuts and looks like sesame seed. HempNut can be used in literally any recipe, it's that versatile. Plus it contains about 40% *more* nutrition than whole hempseed. In fact, it's one of the most nutritious plant foods available, with 36% Essential Fatty Acids (the "good" fat), and 31% high-quality protein (second only to soybean), and very high in vitamins!

We use machines and a special process to gently remove the shell, resulting in the first hempseed clean enough for humans. And we don't have to cook it to sterilize, unlike whole hempseed, because shelling naturally renders the seed unable to grow (in accordance with US law).

Since HempNut tastes like sunflower seed and is the size of sesame, you can use it in any recipe. Try it blended in a smoothie or shake, or sprinkled on foods. Roast it in a pan with spices for a crunchy seasoning, or put some in your favorite salad dressing and shake. Add it to your baked goods for a nutrition boost, or use it as a breading. We have yet to find a recipe that couldn't use HempNut! Kids love it, too. Please ask us for recipes, and send us your favorite, we'd love to try it.

And if you have a restaurant, we'll show you how to add it to your menu...just give us a call.

"Not only is HempNut more healthy than soy, it tastes better and has more uses, too," said Richard. "I truly believe that HempNut will be known as the '*Soybean of the New Millennium!*'"

HempNut is the best source of the essential fatty acids Omega-3 Linolenic Acid and Omega-6 Linoleic Acid, as well as *Gamma*-Linoleic Acid. While most foods have little if any, HempNut is over 36% essential fatty acids, and in "Nature's perfect balance" (1:3). It contains 31% complete and highly-digestible protein (second only to soybean), and is high in vitamins and minerals.

"Hemp foods?!?" "Are you crazy, it can't be legal!" "Don't do it, too risky." "Why do you want to throw it all away now by making hemp foods?" "Sorry, I don't think I can work for you without talking to my lawyer first."

After making and marketing over 70 foods from soy throughout most my adult life, hempseed looked like an easy call. Compared to soybean, it's far more nutritious in many ways, doesn't have soy's anti-nutritional factors, tastes far better, and isn't as disliked as foods from soy. Plus it's new, hip, and most important...fun!

And after watching the soyfoods industry grow in size from \$75 million 20 years ago to almost \$1 billion today, I am firmly convinced that hempseed foods has the ability to grow similarly. And perhaps even faster, considering the inherent nutritional and taste advantages of hempseed. But the most important reason is this: Hemp is hip. Whereas in the '80s I tried often in vain to get people to even just taste our soyfoods, usually to a scrunched-up resistant face, today people can't wait to try hempseed foods!

With soyfoods it seemed people were against them on principle, perhaps from the "cheap soy filler" propaganda dished out for years by the meat industry. But with hempseed foods folks not only want to try it all, they call their spouse over to try it, then take a sample home to their neighbor, all the while expressing amazement at its taste and nutrition, and thanking us for our good work as they leave. That alone convinces me that hempseed foods will have an accepted and important place in our diet in the future.

## 5,000 Years of Hemp

Hemp is Cannabis, but without the psychoactive properties of Marijuana. Popular Science stated that Hemp has 25,000 uses, and that was over 60 years ago! Imagine how many more there are today. It was a required crop in early days of our country, needed to make sails, rope, paper and clothes. Taxes were even paid in hemp, and you could be fined if you didn't grow it. George Washington and Thomas Jefferson were among its biggest proponents. My, how things have changed in our nation's capital...

All around the world today the fibrous stalks are made into textiles and clothes for companies such as Armani and Patagonia, spun into twine and rope for the mining industry, and converted into carpets for Interface. The fiber is made into paper for Crane and Co., animal bedding, particle board, linoleum, plastic for BMW and Mercedes-Benz, fuel, and building materials. Yes, over 1,000 houses have been built in Europe using mineralized hemp stalk and water. Hempseed oil is used in 5 products by The Body Shop, which now reportedly account for between 4% and 12% of sales, after only 18 months on the market.

The sterilized seed and fiber are legal in the United States and elsewhere. Hemp is grown in almost every industrialized country except the United States, which must import millions of pounds per year, while U.S. farmers clamor to be allowed grow it. Hemp is actually legal under U.S. federal law, due to the good efforts of the large hemp industry in 1937 when the Marijuana Tax Act was passed. However, a permit was required from the U.S.D.A., and now instead from the D.E.A. The last hemp company to get a "Producer of Marihuana" [sic] permit was in Wisconsin, in 1957.

Hemp is native to China, where it has been cultivated for over at least 5,000, and possibly even 9,000 years. For comparison, soybean has been cultivated for only about 3,000 years, also from China. Hemp should not be confused with marijuana, its high-octane cousin. Industrial hemp is grown with varieties of the cannabis plant that are very low in THC, the psychoactive substance in marijuana. One could smoke 100 acres of hemp and not get a "buzz."

Keeping hemp off the fields because of its popular cousin is like banning poppy seed because of its cousin opium. No member of the plant kingdom has been more misunderstood and maligned than hemp, a plant that has served millions of people for thousands of years, and is perhaps mankind's most useful.

But when they think of "Hemp," most people think of cloth, ropes, paper, and the like. Although hemp fiber has been used for millennia for those things, what most people may not know is that hempseed has also been used just as long for food! And as good as hemp is for all the other products, hempseed might even be *more* valuable for human and industrial uses. It has been called "one of the most nutritious foods on earth," and for good reason: HempNut brand shelled hempseed is 31% high-quality protein, 36% essential fatty acids (the "good fat"), and high in vitamins and minerals. Plus it tastes like pine nuts or sunflower seed, and can be used in almost any recipe. It's considered the breakthrough hempseed food that finally allows hempseed to be more palatable and accessible to consumers. HempNut was even awarded a *Hempy Award* for Technical Innovation.

## **A Nutrition Powerhouse**

Shelled hempseed is perhaps the most nutritious plant food on earth, and even *that* might be an understatement! It has almost as much protein as soybean, is complete like soy but

more digestible and of higher quality, similar to egg whites. Unlike soybean, hempseed is free of trypsin inhibitors (which impair protein absorption), and it lacks oligosaccharides found in soy, which cause gas and stomach upset. There are also a significant number of people that are allergic to soy products, whereas hempseed is rarely allergenic. And now soybean is being genetically modified just so more poisonous pesticides can be applied to them, not so with hempseed.

And as incredible a protein source as hempseed is, it is even more nutritious in another important area: Essential Fatty Acids (EFAs). At 80%, hempseed oil is one of the richest sources of polyunsaturated fatty acids, specifically the essential fatty acids linoleic acid (abbreviated "LA," chemical name 18:2w6) and (*alpha*) linolenic acid ("LNA," 18:3w3). "Essential" because the human body cannot manufacture them and, therefore, it must come from dietary sources. It is considered "good" fat. Hempseed oil contains approximately 60% LA and 20% LNA. HempNut itself naturally contains about 47% hempseed oil in the kernel, so it too is about half as rich as oil in these critical fatty acids. The 3:1 ratio of LA to LNA in hempseed oil has been recommended as optimal for long-term health maintenance, since this ratio is found in healthy human adipose tissue. The ratio is unique among plant oils, and is the opposite in flax seed (fresh linseed) oil, another rich source of EFAs. Therefore, flax seed oil is superior for short-term treatment of LNA deficiency, but unsuitable as a long-term dietary staple, unlike hempseed oil. Recommended Daily Allowance for an adult is 1.4 to 4.6 grams of LNA and 8 to 14 grams of LA.

In contrast to the shorter-chain and more saturated fatty acids, EFAs serve not as energy sources, but as raw materials for cell structure and as precursors for the synthesis of many of the body's regulatory biochemicals, including hormones and prostaglandins, necessary for almost every body process.

This is an important point: because it is so rich in EFAs (80%) and goes straight to work in metabolic functions, hempseed oil may be considered a "diet oil," contributing fewer calories than other oils or fats. Plus it makes a great salad dressing!

This is why EFAs are considered "good fats." If one is on a low-fat diet, it is critical to consume enough EFAs to maintain health. Other fats in the diet will only displace the EFAs one should be getting.

EFAs help carry off toxins from the skin, kidneys, lungs and intestinal tract. They also create energy within our cells by carrying oxygen from red blood cells into them. Converted into hormone-like substances known as prostaglandins, they regulate many cellular functions including cholesterol production and blood platelet aggregation. As the different prostaglandins have opposite effects, they are needed by the body in a delicate balance derived from a balanced intake of various EFAs. Even people on a cholesterol-free diet can have high cholesterol in their blood, which may be reversed merely by adding EFAs to the diet, since the body makes excess cholesterol in an attempt to make up for the lack of EFAs.

Another EFA, *Gamma*-linolenic acid ("GLA," C18:3w6), is derived from the essential fatty acid Linoleic acid (LA), and is found in minute quantities in most fats of animal origin. Oats and barley also contain small amounts, as does human milk. Good sources of GLA include the hempseed and hempseed oil (2-6% GLA in whole hempseed), the blue-green algae *Spirulina* and evening primrose oil, black currant seed oil, borage oil and some fungal oils. In the body, GLA is normally derived from LA and serves as an

intermediary for the formation of longer-chain fatty acids and eicosanoids (short-lived hormone-like substances which fulfill numerous vital roles, ranging from control of inflammation processes and vascular tone to initiation of contractions during delivery). Its alleviating action on psoriasis, atopic eczema, and mastalgia are already well-documented, and GLA preparations are now frequently prescribed for the treatment of the latter two disorders. GLA has also been researched for its beneficial effects in cardiovascular, psychiatric and immunological disorders.

Stearidonic acid (18:4, *cis*-6,9,12,15), or "SDA," makes up as much as 2.5% of hempseed oil, and is important for the human diet. Though black currant seed oil may occasionally contain up to 9% of SDA, the 2.5% found in the hempseed oil is enough to be of significance to human health, especially in combination with GLA.

Most everyone is aware that a diet high in saturated fatty acids, such as those found in red meat, causes plaque to build up in the arteries and inhibits blood flow, thus increasing the risk of stroke and heart attack. Fried foods as well as hydrogenated and refined oils produce trans-fatty acids which have a similarly detrimental effect. EFAs have a slippery quality and remain liquid at body temperature, so they do not contribute to the clogging of arteries like trans-fatty and saturated fatty acids do.

Reducing EFA intake on a fat-free diet leaves one feeling hungry and deprived, and may cause one to binge in high-calorie foods to compensate. Plus the body needs to have *some* fat in the diet in order to absorb important fat-soluble nutrients such as vitamins A, D, E and K. A diet devoid of fat may cause dry skin and hair and, in more serious cases, learning and vision problems, among many others.

Vegetarians and those who do not eat fish can obtain large amounts of LNA, LA, and GLA through hempseed oil or HempNut. These essential fatty acids are the building blocks of EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), found naturally in cold-water fish, and which are the source of EFAs in fish oils and many other Omega-3 supplements. Note that fish oil may be high in cholesterol.

Foods rich in EFAs reduce the risk of heart disease and reduce the blood clots that cause heart attacks and strokes, control cholesterol levels, and lower blood pressure. As EFAs have natural anti-inflammatory properties, they can also help with conditions such as arthritis and auto-immune disorders.

A deficiency of LA can manifest as arthritis, behavior disturbances, cardiovascular problems, excessive thirst and water loss through the skin, hair loss, infection, kidney and/or liver degeneration, miscarriage, poor glandular function, poor circulation, premenstrual syndrome, slow wound healing, slow growth and maturation, skin diseases, and reduced sperm motility or impotence in men.

A deficiency in LNA can result in attention deficit disorder, crohn's disease, depression, dry skin, elevated triglycerides, edema, high blood pressure, hyperactivity, immune weakness, inflammation, infection, learning disability, mental deterioration, slow growth, slow metabolism, lack of coordination, vision impairment, and weakness.

A deficiency in GLA can cause arthritis and premenstrual syndrome. GLA improves hair and nail growth as well as skin health. It aids hormone production, and promotes sexual desire. It can be useful in treating low libido, erectile dysfunction, inability to orgasm, and premature ejaculation. It is considered a natural aphrodisiac. With 5,000 years of history eating hempseed, no wonder there are 4 billion Chinese today!

The quantity of protein in HempNut is higher than animal foods, and second only to soybean. The protein contains all the essential amino acids, with high amounts of the amino acids cysteine and methionine, which are often lacking in a vegetarian diet. It is also high in glutamic acid, a neurotransmitter that helps one deal with stress.

About 65 percent of the total protein in hempseed is Edestin. Edestin, which has the same Greek root as the word "edible," is a globulin protein only found in hempseed. It aids digestion and is relatively phosphorus-free. In the early 20<sup>th</sup> century edestin was one of the most-studied proteins, sufficient as the sole protein source for animals. It was used as a medium in microbiology petri dishes, and the enzyme protease was discovered using it. Edestin is also considered the backbone of the cell's DNA. The other 1/3 of hempseed protein is Albumin, a very high-quality globulin protein and similar to that found in egg whites and the body. Albumin is a major source of free radical scavengers, and is highly digestible. Many of the high-protein/low-carbohydrate diets popular today can't be used for more than 3 months since they don't include enough EFAs and fiber, and are hard on the kidneys from all the hard-to-digest animal protein. Plus they aren't "vegetarian-friendly." Because of its high content of easily-digested protein, fiber, and EFAs, HempNut could be the missing link in these diets. One doesn't have to eat only animal foods for protein anymore, and a diet that includes HempNut will be more satisfying, healthful, and sustainable.

HempNut is rich in vitamin E, a natural antioxidant that helps protect oils from rancidity and prevents free radical damage. HempNut also contains carotene, a natural precursor to vitamin A, which strengthens mucous membranes and is needed for vision.

Other nutrients contained in HempNut are choline, inositol, lecithin, and phytosterols. Choline is needed for nerve impulses from the brain through the nervous system, and for liver and gall bladder function. Inositol promotes hair growth, reduces cholesterol levels, prevents artery hardening, and is calming to the nervous system. Lecithin is a type of lipid found in the protective sheaths surrounding the brain and nervous system; it also aids in the breakdown of fats, and enhances liver activity and enzyme production. Phytosterols affect cholesterol absorption and are sometimes described as "plant hormones."

HempNut is also high in minerals such as phosphorus, potassium, sodium, magnesium, sulfur, calcium, iron, and zinc. Phosphorus is needed for cell growth, kidney function, heart contraction and bone formation. Potassium supports the nervous system and regular heart rhythm and, with the help of sodium, aids in the body's balance of water. Magnesium is needed for nerve and muscle message transmission. Sulfur helps the body resist bacterial invasion and protects it against toxic substances. Calcium is essential for strong teeth and bones, for nerve impulses, and for a regular heartbeat. Moderate amounts of iron help in the production of red blood cells and energy. Zinc is needed for a healthy reproductive system and the male prostate gland, and it improves wound healing and immune strength.

It is impossible to think of another food source that can provide such an important and wide range of health-promoting nutrients. No wonder we think HempNut hempseed oil and HempNut shelled hempseed could be helpful for many illnesses so common in the western world today! That's why we call it "The Soybean of the New Millennium."

## **Dietary Treatments**

The following conditions may be helped by adding EFAs in the form of hempseed oil or HempNut to the diet (of course, the following is not intended to be a diagnosis or recommendation, which should only be under the advise of a physician):

**Neurodermitis** - Patients with neurodermititis suffer from agonizing itching, especially at night. The skin feels very dry and the activity of perspiratory and sebaceous glands is very low. Neurodermitis, like psoriasis, is characterized by a high water loss through the skin. Deficiency in EFAs can be one of the main causes. Patients with neurodermitis show a deficiency of essential fatty acids which affects the whole body. It is assumed that inhibition of the enzymatic transformation of linoleic acid leads to GLA deficiency and subsequently to prostaglandin deficiency. Hempseed oil, due to its high content in both, linoleic and gamma-linolenic acid, thus can assist in the treatment of this disease. The daily oral intake which was found to improve skin condition over a twelve week period corresponds to about four teaspoons of hempseed oil or 1 1/2 ounces of HempNut.

Another study showed improving skin conditions through external application of an ointment containing GLA, so a hempseed oil salve or balm might be useful.

**Cardiovascular Diseases** - Most cardiovascular diseases are caused by the formation of arterial plaque, the deposit of hardened material on the interior walls of arteries. This process may eventually block blood flow and cause arteriosclerosis and strokes. LDL cholesterol (the "bad" fat), a sticky substance present in the blood, has been identified as one of the main contributors to arterial plaque formation. Among other factors, the intake of the saturated fatty acids found in animal fat is known to contribute to a high LDL level in the blood. Dietary treatment with daily doses of linoleic acid and GLA which correspond roughly to four teaspoons of hempseed oil has shown to rapidly decrease elevated blood levels of both LDL cholesterol and total cholesterol. Thus, the regular use of hempseed oil may help reduce the risk of arteriosclerosis and other cardiovascular diseases.

**PMS** - Premenstrual syndrome (PMS) can include varying intensities of painful muscular tension, swelling of the breast, nervousness, irritability, as well as aggressiveness and depression. Research indicate that women with PMS suffer from a fatty acid metabolism disorder. The ability to convert linoleic acid into gamma-linolenic acid and subsequently into prostaglandins is disturbed. A daily intake is of 1.37 grams of Linoleic acid and 156 milligrams of GLA over a period of twelve weeks has been shown to significantly improve the PMS related symptoms in clinical studies. This intake corresponds to only one teaspoon of hempseed oil, or 2 teaspoons of HempNut, per day.

**Rheumatoid Arthritis** - EFAs, including GLA, are effective anti-inflammatory and immune system stimulators. Daily oral intake would be eight teaspoons of hempseed oil or 5 ounces of HempNut over twelve weeks.

**Other Diseases** - A number of clinical studies suggest administration of GLA as a preventive measure and as a treatment for multiple sclerosis, schizophrenia, psychosis, and cancer. Multiple sclerosis occurs more frequently in geographical regions where the diet includes high amounts of saturated fats. Dietary supplementation of unsaturated fatty acids may have a positive effect on the course of the disease. In patients with schizophrenic psychosis disturbances are found in the fatty acid metabolism which might be treated through administration of EFAs. Cancer treatment may be assisted by administration of LA and GLA. Cancer tissue and cells have lower contents of GLA and other related metabolites compared to healthy tissue. LA enhances die-off of cancer cells.

Throughout history, hempseed has had many medicinal uses that are worthy of consideration today. In herbal medicine, hempseed contains the following properties:

Anti-inflammatory — Soothes and reduces inflammation

Antiseptic — Prevents bacterial growth, inhibits pathogens, and counters sepsis

Demulcent — Soothes irritated tissues, especially of the mucus membranes

Diuretic — Increases urine by promoting activity of the kidneys and bladder

Emollient — Used externally to soothe, soften and protect the skin

Hypotensive — Lowers high blood pressure

Laxative — Stimulates bowel action. In the case of whole hempseed, this is due to its high fiber and soothing qualities rather than being an irritant to the intestines

Tonic — Promotes general health and well being. Improves all organ systems. Builds energy and strength

According to research and folk medicine, the following illnesses may be improved by adding EFAs in the form of hempseed oil or HempNut to the diet (of course, the following is not intended to be a diagnosis or recommendation, which should only be under the advise of a physician):

Addiction — Dr Johanna Budwig suggests that EFA were helpful in treating addictive tendencies including alcohol, cigarettes, drugs and even addictive sex-and-violence patterns. When EFAs are consumed, a person is more able to manage stress, and nerve and brain functions are more stable. Essential fatty acids increase the electric tension capacity across cell membranes and help a person feel more calm and satisfied.

Arthritis and other inflammatory disorders — Using GLA reduces inflammation in joints. LNA fatty acids have demonstrated anti-inflammatory effects in diseases such as bladder infection, ulcerative colitis and Crohn's disease, an inflammation of the bowels.

Attention deficit/Hyperactivity — The American Journal of Clinical Nutrition published a report on EFAs and their positive effect in helping these conditions. Dr Donald Rudin, medical researcher and physician, found that EFAs could help improve schizophrenia, help juvenile delinquents be more responsive to counseling and improve depression.

Brain function — EFAs are critical for the cell membranes, since at least half of the brain's cell walls are composed of fats. Adequate EFA help the brain stay permeable and flexible. Children require LNA for proper brain maturation. A deficiency in LNA can contribute to learning disabilities. Research using supplementation of LNA and LA indicates they are useful in the treatment of depression, attention deficit disorder, and schizophrenia.

Cancer — Cancer cells and tissue have lower GLA and LA levels than healthy tissue. Saturated fats and refined vegetable oils are believed to be contributing factors in cancer. Dr Johanna Budwig, who has been nominated for the Nobel Prize many times, proposes that trans-fatty acids are high contributors to cancerous tumor growths. Blood samples taken from cancer patients were lacking in EFAs, and showing a greenish-yellow substance. When a diet high in EFAs and skim milk protein was fed to the cancer patients, the greenish yellow substance gradually disappeared, tumors receded, and many patients recovered during a three-month period. LNA improves cellular utilization of oxygen, decreases tumor formation, and slows tumor growth by decreasing the metastasis of cancer cells, which may lengthen a cancer patient's life.

Cardiovascular Disease — Arterial plaque is a major factor in cardiovascular disease, and if these fatty deposits harden and impair blood flow, arteriosclerosis can occur, which

causes heart attack and stroke. Hempseed oil decreases cholesterol levels and can lower the risk of heart attack. A 1992 study reported that a diet containing hempseed reduced serum cholesterol levels. The heart needs an adequate supply of LA to function properly. EFAs help keep fats fluid. Switching one's dietary fats to a fat rich in LNA and LA helps lower the LDL (Low-Density Lipid, or "bad" fat) and improves the beneficial HDL (High-Density Lipid) levels.

Children's health — Hempseed is a galactagogue, increasing production of mother's milk in nursing mothers. It also increases GLA in her milk supply and provides nutrition for the nursing mother. When LA is deficient in children's diets, growth is slowed (especially the brain), skin problems occur, hair grows more slowly, and colic and diarrhea are more common. Pregnant and nursing mothers should include hempseed oil in their diets. Hempseed is nourishing, tasty, and certainly suitable for children. This is so important for developing babies that infant formulas are now required to be fortified with EFAs.

Constipation — Traditional Chinese medicine has long believed that large quantities of hempseed is a demulcent laxative that helps soothe and lubricate the bowel, and is useful in the prevention and treatment of constipation. Normal amounts of whole hempseed or HempNut are not sufficient.

Diabetes — Elevated blood sugar levels, a condition of diabetes, can also cause a deficiency in EFAs in the body. Symptoms of numbness and tingling in the extremities, a common in diabetes, can be alleviated with a daily intake of 360 milligrams GLA, the equivalent of three teaspoons of hempseed oil or 6 of HempNut.

Diarrhea — Hempseed tea soothes irritated intestines and provides nutrients during bouts of diarrhea. When it's eaten as a gruel, it can help solidify the stool in cases of diarrhea.

Earache — The oil from hempseed is used in ear drops to loosen earwax and reduce ear pain, as well as fight infection.

Edema — EFAs assist the kidneys in eliminating excess water from the tissues.

Hempseed is also a diuretic, which relieves the swelling of edema.

Fatigue — Consuming EFAs helps a person retain their alertness late into the evening. A deficiency in EFAs can contribute to anemia, which causes a loss of energy. LNA and LA shorten the time it takes for tired muscles to recover. They also help convert lactic acid buildup to carbon dioxide and water, allowing tired muscles to recover faster.

Athletes using LNA find they have more stamina, higher performance levels and quicker recovery. When athletes added EFAs to their diets, they gained strength and endurance, could lift more, do more reps, and had quicker recovery from fatigue. It is also reported that athletes' sprains and bruises heal more quickly when LNA was included in their diets.

Immune deficiency — In order for the body to resist and recover from infection, it needs to be able to produce antibodies, which requires globulin protein. HempNut is rich in globulin proteins. The EFAs in hempseed help improve immune response and deter infections, increases oxidation, and can prevent allergies from occurring. EFAs improve the metabolic rate, helping to prevent some harmful yeasts and bacteria which survive best in an environment of lower metabolic rate and decreased oxidation. EFAs also strengthen cellular membranes, making them less susceptible to infection.

Menopause — Dry skin, vaginal dryness, night sweats, hormone production, hot flashes and moodiness can all be improved with EFAs.

Multiple Sclerosis — EFAs slow nerve deterioration. Studies correlate MS patients' abnormal metabolism to their inability to convert EFAs from polyunsaturated fatty acids. In geographical areas where EFA consumption is adequate, MS is rare. Studies show that supplementation of EFAs and GLA improve MS.

Obesity — Using "good" fats such as EFAs can help reduce hunger. EFAs increase the metabolic rate and help break down excess saturated fat and "fat sludge." Fat in the small intestine stimulates the release of chemical transmitters that cause the brain to feel satisfied and less hungry. EFAs also help one feel more satisfied, less depressed, and less "starved."

Osteoporosis — Bone loss is a serious concern of the elderly. It is often associated with kidney and artery calcification. Using EFA supplementation improves calcium absorption, and enhances bone and collagen synthesis and overall bone strength.

PMS — Premenstrual syndrome can cause breast tenderness, cramping, irritability and depression prior to the menstrual cycle. Women that have PMS often have difficulty metabolizing fatty acids, which inhibits the conversions of LA and prostaglandins. One teaspoon daily of hempseed oil given to women in a twelve-week study improved their symptoms of PMS in a clinical study.

Skin ailments — Polyunsaturated fatty acids (like those in hempseed and HempNut) are regarded as anti-inflammatory agents, and the LA content of hempseed can benefit acne. It is believed that low enzymatic activity causes a lower conversion of LA to GLA, resulting in a prostaglandin imbalance. A deficiency in LA is also associated with eczema and psoriasis, as LA helps regulate water loss through the skin. Clinical studies with GLA have demonstrated improvement in eczema, result in less itching and less need for antihistamine drugs. Hempseed oil contains GLA, and about four teaspoons daily is the recommended intake to bring about improvement. Salves containing hempseed oil, applied to the skin, help relieve itching and speed the healing of the skin. Hempseed oil has also been applied to pregnant bellies to prevent stretch marks. Dry skin conditions and the metabolic slowdown that occurs in aging are helped by the use of EFAs.

Hempseed is rejuvenative, helping to provide beneficial oils to keep the skin smooth and velvety with less wrinkling. HempNut, Inc. sells a very high-quality healing lip balm in stick form, in 2 flavors. It also contains SPF-15 sunblock.

Tuberculosis — Thirty years of experience in Czechoslovakia found that the diet appropriate for tuberculosis must be high in protein. The study stated "[g]round hempseed extracted by milk at a temperature from 60 to 89 degrees C. prove to be - even in their smallest doses - an utmost effective remedy." EFAs also help to liquefy mucus, making it easier to expel.

Hempseed oil is an exceptionally rich source of polyunsaturated fatty acids, specifically the essential fatty acids linoleic acid (LA, 18:2w6) and (*alpha*) linolenic acid (LNA, 18:3w3). "Essential" because the human body cannot manufacture them and, therefore, it must come from dietary sources. Hempseed oil contains approximately 60% LA and 20% LNA.

Though hempseed oil is expensive in comparison to refined, solvent or heat-pressed oils, it is superior in nutritional value. Some believe that when it is cultivated again in the U.S., its cost would be comparable to that of corn oil.

One to three tablespoons daily is the suggested intake for adults. Children can use half that amount, infants one-third. Nursing babies will obtain the benefits through their mother's milk if the mother uses hempseed oil as a supplement.

Botanically speaking, hempseed is actually a tiny fruit, or achene, forming in the tops of the female Cannabis flowers, in late summer. It is protected by a thin, hard shell with a marbled pattern in brown or gray. The shell is edible, consisting mostly of fiber, and is mostly indigestible. It also contains some chlorophyll.

Seed size can vary widely, from 2 grams per 1,000 seeds to as large as 60 grams, with the average around 30 grams per 1,000. They are somewhat egg-shaped and flatter at their margins. Each seed contains a whitish embryo. The flavor of the embryo is comparable to sunflower seeds and pine nuts, yet about the size of sesame seed. They are very versatile and can be used in any recipe.

### **Cooking with HempNut**

HempNut is a delight to cook with! For years we've enjoyed natural foods cooking and have found that any good recipe is even better with HempNut. Brigitte's friends and family have delighted in being part of the testing of all these HempNut recipes.

HempNut can be sprinkled plain or toasted on cereal, salad, soup, grains, pasta, yogurt, applesauce, or ice cream. It can also be put in a skillet with sugar, and toasted. The sugar caramelizes while the HempNut roasts. Cool it and use on desserts.

It can be used to thicken and give richness to soups, or ground into a nut butter and used like peanut butter or almond butter.

HempNut can be baked into breads and pastries, or used as breading for fish, mushrooms, squash, and the like. It can be used in recipes replacing nuts, seeds, soy products, oats and many grains. HempNut can be ground in the blender and used to replace up to 20% of the amount of flour required in a recipe.

It is useful in special diets where people have intolerances to dairy, soy, corn, or gluten, as it is easily tolerated and digestible. The toasted seeds give crunch to cookies.

When using HempNut in recipes, you may find that you can decrease the amount of added oils as it contains its own nutritious oil.

These are just some of the foods one could make using HempNut, from A to Z:

animal feed, baba ganouj, baby food, bagel, baklava, bars, beverages, bird seed, biscotti, biscuits, borscht, bread, breading, breakfast cereal, brownies, burgers, burrito, butter, cake, camping food, candy, cannoli, caramel candy, caramel popcorn, caramelized toppings, casserole, cheesecake, chicken feed, chocolate, chocolate torte, cobbler, coffee, coffee cake, cookies, corn bread, crab cakes, crackers, cream, cream cheese, cream soup, dessert topping, dip, dressing, dry mixes, enchiladas, energy bar, extruded or puffed snacks, falafel, fish, fish food, flour, french toast, frosting, frozen dessert, fudge, garlic butter, gazpacho, gingerbread, gomasio, granola, gravy, grits, gruel, guacamole, hamburgers, hard cheese, hummous, ice cream, lasagna, lassi, loaf, macrobiotic food, marinade, mayonnaise, meat alternative, medical foods, milk, miso, mousse, muesli, muffins, nut butter, oil, pancakes, parmesan alternative, pasta, pasties, pastries, paté, pesto, pie, pie crust, pilaf, pita bread, pocket sandwiches, polenta, pralines, pretzels, protein powder, pudding, quiche, raita, rice, roast, salsa, sandwich spread, sauces, sausage, scones, seasoning, shakes, smoothies, snack chips, soup, sour cream, spread, squares, stir-fry, stuffing, sushi, tabouli, tahini, tamale, tapenade, tempeh, toffee, tofu,

torta, torte, tortellini, tortillas, trail mix, truffles, veggie burger, waffles, yogurt, and zwieback.

## Nutritional Analysis of Hemp

Calories/100g	567
Protein (Nx5.46)	30.6%
Fat	47.2%
Saturated Fat	5.2%
Monounsaturated Fat	5.8%
Polyunsaturated Fat	36.2%
Carbohydrate	10.9%
Ash	6.6%
Moisture	4.7%
Palmitic16:0	3.44%
Arachidic 20:0	0.28%
Oleic18:1 (Omega-9)	5.8%
Linoleic18:2 (Omega-6)	27.56%
Linolenic18:3 (Omega-3)	8.68%
Stearic18:0	1.46%
Cholesterol	0.0%
PeroxideValue	<2 meq/Kg
Total Dietary Fiber	6.0%
Sugars	1.99%
Fructose	0.45%
Glucose	0.30%
Sucrose	1.24%
Maltose	<0.1%
Lactose	<0.1%
Vitamin A (B-Carotene)	4 IU/100g
Thiamine (Vit B1)	1.38 mg/100g
Riboflavin (Vit B2)	0.33 mg/100g
Vitamin B6	0.12 mg/100g
Vitamin C	1.0 mg/100g
Vitamin D	2277.5 IU/100g
Vitamin E (dl-A-Tocopherol)	8.96 IU/100g
Sodium	9.0 mg/100g
Calcium	74.0 mg/100g
Iron	4.7 mg/100g
Standard Plate Count	4000/g
Coliforms	<10/g
Yeasts	<10/g
Molds	30/g
Salmonella	neg in 25g
Pseudomonas	<10/g

Tetrahydrocannabinol

neg in 60mg

### Amino Acid Assay of Hemp

Alanine	1.22%
Arginine	3.35%
Aspartic acid	2.97%
Cystine/cysteine	0.39%
Glutamic acid	5.31%
Glycine	1.21%
Histidine*	0.90%
Isoleucine*	1.14%
Leucine*	1.88%
Lysine*	0.91%
Methionine	0.57%
Phenylalanine	1.14%
Proline	1.43%
Serine	1.60%
Threonine*	1.03%
Tryptophan*	0.39%
Tyrosine	1.04%
Valine*	1.42%
Meth + cys*	0.96%
Phen + tyr*	2.19%

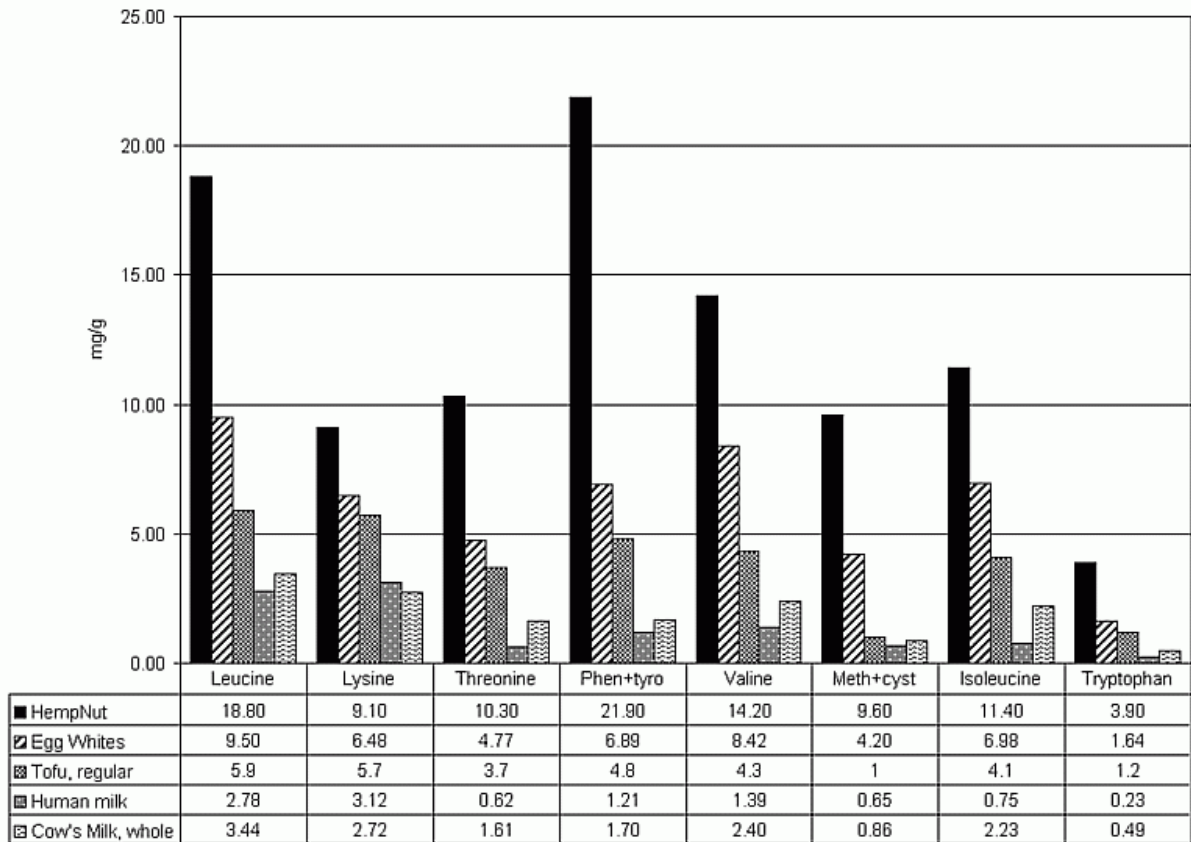
Protein Digestibility:	0.93
PDCAAS:	0.46
PER:	1.87

\*=Essential Amino Acid

		Whole	HempNut™	Hempseed	Hempseed
	HempNut™	Hempseed	Oil	Meal	Sprouts
Calories	567	503	730	452	192
Protein, g	30.6	22.5	0.0	26.0	10.4
Total Fat, g	47.2	30.0	81.0	20.0	4.4
Saturated Fat, g	5.2	3.3	9.0	2.2	n/a
Monounsaturated Fat, g	5.8	3.7	10.0	2.5	n/a
Polyunsaturated Fat, g	36.2	23.0	62.0	15.3	n/a
Carbohydrate, g	10.9	35.8	0.0	41.0	27.8
Ash, g	6.6	5.9	n/a	5.5	2.7

Moisture, g	4.7	5.7	19.0	7.0	54.7
Linoleic acid (LA), g	27.6	17.5	57.0	11.7	n/a
Linolenic acid (LNA), g	8.7	5.5	19.0	3.7	n/a
Gamma-linolenic acid (GLA), g	0.8	0.5	1.7	0.3	n/a
Total Essential Fatty Acids, g	36.2	23.0	76.0	15.4	n/a
Palmitic acid 16:0, g	3.4	2.2	4.9	1.5	n/a
Arachidic acid 20:0, g	0.3	0.2	0.4	0.1	n/a
Oleic acid 18:1, g	5.8	3.7	12.0	2.5	n/a
Stearic acid 18:0, g	1.5	0.9	2.1	0.6	n/a
Cholesterol, mg	0.0	0.0	0.0	0.0	0.0
Total Dietary Fiber, g	6.0	35.1	0.0	36.5	20.1
Sugars, g	2.0	n/a	0.0	5.0	n/a
Vitamin A (B-Carotene), IU	4.0	37.0	19.0	n/a	50.0
Thiamine (Vitamin B1), mg	1.4	0.9	n/a	n/a	0.2
Riboflavin (Vitamin B2), mg	0.3	1.1	n/a	n/a	0.2
Vitamin B6, mg	0.1	0.3	n/a	n/a	0.2
Niacin (Vitamin B3), mg	0.0	2.5	n/a	n/a	n/a
Vitamin C, mg	1.0	1.4	n/a	n/a	2.0
Vitamin D, IU	0.0	10.0	n/a	n/a	1492.2
Vitamin E (dl-A-tocopherol), IU	9.0	3.0	1.0	n/a	4.0
Sodium, mg	9.0	0.0	n/a	0.0	8.9
Calcium, mg	74.0	1.7	n/a	n/a	176.5
Iron, mg	4.7	0.2	n/a	n/a	4.8
<i>n/a= not available</i>					

### Essential Amino Acid Comparison



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