Hemp Nation Bars- the gluten-free, high-protein, superior granola bar

The product that will revolutionize the way hemp is viewed.

Tag Words: hemp, hemp seed, hemp oil, hemp uses, illegal growing of hemp, hemp granola bars

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Summary: (MK)

Hemp is a naturally occurring substance that is still illegal to grow in America, for the most part. There are many people that are trying to legalize the production of it due to its many uses. With over 25,000 uses, hemp is very versatile. In this instance, hemp will be used for its nutritional values. Hemp is high in protein and contains all nine of the essential amino acids needed for maintaining a healthy body, as well as fiber, vitamin E and trace minerals. The problem, however, is that many people most likely do not know this. This is where the bars tie in with the service project. The main goal of the project is to educate people on the benefits and possibilities of hemp while trying to find a new way to make protein bars. The bars would serve to be the subjects to be tested, and by letting people try the actual product while reading the facts, a more positive outlook on hemp can be achieved. Our product is going to use superior ingredients, using local honey, hemp seeds with no chemicals, etc. The package will have marijuana leaves on it, therefore attracting a lot of consumers to the product.

Video Link: http://youtu.be/Q-gOcsD2sJE

Research- Nicole Parello, Meina Karimi

Hemp and its Obstacles in being used (NP)

Hemp is not grown in the United States, and is not a well known alternative in food products, despite it being nutritionally superior with its high protein and essential fatty acid content, and it being gluten-free. Not only this, but hemp is a versatile item, used in a number of different industries including clothes, fuel, food, body care products and more. Growing hemp is one of the oldest industries in the world. It dates back more than 10,000 years, coinciding with the creation of pottery. The Columbia History of the World states that the earliest sign of human industry is a bit of fabric made from hemp which has been dated to be from about 8,000 BC, which shows that humans understood its value even then. In addition, it has been discovered that both President Washington and
President Jefferson grew hemp. At that time, it was completely legal. Hemp also played a role in the later history of America, with is being subsidized by the U.S. Government during World War II and farmers growing millions of acres of it (Hemp Industries Association).

There are many websites that explain the benefits of eating hemp seeds and oils, and there are many products made in the United States that contain hemp, with the hemp being imported from other countries like Canada where it is legal to grow it. Despite these resources and products that attempted to solve the problem of lack of awareness of hemp, the benefits of choosing foods and other items made from hemp seeds are still not well known by the public.

Our goal is to find ways to solve this problem by spreading awareness of the benefits of choosing hemp through creating a hemp granola bar that people can taste, made from the finest ingredients and green energy. This granola bar will be made using natural ingredients, is gluten-free, and high in protein so will provide health benefits to people, along with being an alternative for people who are gluten-intolerant, and an after or before exercise choice for people who are searching for a healthy, high-protein bar.

Through hemp research provided in this paper, the reason for hemp being illegal in the United States, the uses of hemp, the nutrition benefits of hemp, where hemp is imported from, hemp seed compared to other seeds, how hemp is purified, and experiments done on hemp has been analyzed.

Why Hemp is Illegal to Grow in America (NP)

Hemp is illegal to grow in America because it comes from the same plant species, cannabis, as marijuana does. The marijuana parts of the cannabis plant include the resin, buds, and leaves; whereas the hemp part of the cannabis plant includes the sterilized seeds and stalks, the remainder of the plant. The marijuana part of the cannabis plant contains most of the tetrahydrocannabinols (THC), which is the hallucinogenic part of the cannabis plant that causes people to feel high; but the hemp contains some THC (justice.gov). The THC in marijuana that gets people high is 9 THC. Hemp contains 0.03 percent THC so does not get people high (Reeves, 2012). Hemp oil contains a high cannabidiol (CBD)-to-THC ratio; and the CBD counteracts the high that THC produces, causing THC to contain no narcotic effects that marijuana causes (Reeves, 2012). The trace amount of THC in hemp can cause a positive drug test depending on the regulations of the amount of THC that can be in the blood stream (Reeves, 2012). But, testing for THC in hemp products giving a positive drug test is the same as opium in poppy seed bagels causing a positive drug test for opiates, yet poppy seed bagels are not illegal, nor are they under pressure from the Drug Enforcement Administration like hemp products are (Leson). Even though the hemp part of cannabis contains only a small amount of THC, it is still illegal to grow in America since hemp cannot be produced without producing the marijuana, since the whole plant would have to be grown to get the hemp portion (justice.gov).
It has also been said that there are two forms of *Cannabis* plant species: one is marijuana, which is high in THC and low in cannabinoids, CBD; the other is industrial hemp, which is low in THC and high in CBD (West, 1998). Therefore, there are two different plants from the species *Cannabis*, and the Industrial hemp plant is low in the THC. People cannot get high from industrial hemp because not only is it low in THC, but the high CBD content of this form of cannabis counteracts the THC’s psychoactivity. Industrial hemp is the *Cannabis* plant that contains no more than 0.3 percent THC in its leaves and flowering heads. It has derivatives of its seeds that include oil and seedcake. It does not contain non-viable *Cannabis* seed, and does not contain the mature stalks or fibres from the stalks; but it includes derivatives of its seeds. Also, this means the fibres or products that are made from this mature cannabis stalk can be imported into Canada, treated, and sold there. This industrial hemp with its low THC and high CBD is grown in Canada, effective on March 12, 1998 (West, 1998). Industrial hemp is therefore a different strain of the *Cannabis* plant, which cannot get people high, and should be legal to grow everywhere.

Through genetically modifying the cannabis plant, people have been able to develop strains containing no THC (0%). This was done in France by hemp-seed breeders, and is called “Santhica” (hempworld). But, the European Union (EU) has chosen THC content of 0.3% as legal to be used since people can not get high from 0.3% THC (hempworld). The United States should be allowed to grow “Santhica” since there is no THC in it at all, yet it is still illegal.

The Hemp Industries Association (HIA) made the TestPledge Program in 2001, which states that the consumption of hemp cannot cause people to have a positive drug test for marijuana (Leson). This was made in Canada, and North America has signed onto it for their hemp nut and oil products. Due to this pledge, the companies that make hemp products commit to keeping the levels of THC in hemp oil and seeds to trace amounts so it cannot cause a positive drug test result for those who eat it (Leson). Despite these measures, the Drug Enforcement Administration continues to harass the hemp industries on the levels of THC in hemp products (Leson).

Hemp was banned from being grown in the United States in 1937, when marijuana was made illegal (Reeves, 2012). Hemp can be imported into the United States to consume, process, and wear it; but hemp cannot be grown industrially for food, fabric, paper, or oil. This is thought to be because hemp was a competitor with synthetic fiber, plastics, and paper industries made in the United States; so it was banned from being grown (Soiferman, 2012). In May of 1997, Canada passed the Bill C-8, freeing the hemp from the 1938 bill originally passed after the United States passed there’s, so Canada could now grow hemp (Soiferman, 2012). The hemp that is imported into the United States comes mostly from Canada. However, in the United States, hemp is still illegal to grow (Soiferman, 2012). The hemp grown in Canada is used for oil, seed, and construction material, with little of it going to the fabric industries. Hemp for fabric is exported from China and Europe (Soiferman, 2012).

Even though industrial hemp is still illegal to grow in the United States under federal law, 10 states passed legislations allowing it to be grown for the purpose of research. These
states include California, Hawaii, Illinois, Arkansas, New Mexico, North Dakota, Minnesota, Montana, and Virginia, with many states considering it (Industrial Hemp).

**What Hemp is used for, and Some of its Benefits** (NP)

Hemp actually benefits the ground which it grows on. It reduces deforestation, while also improving the soil it is grown upon; along with this, products made from hemp are recyclable, biodegradable, and compostable making them easy on the landfills (Soiferman, 2012). This is because hemp is able to breathe and is biodegradable, along with being a renewable source (Herb Resources: The Many Uses of Hemp). Being rich in cellulose, hemp has become popular for its use in biodegradable plastic products (Herb Resources: The Many Uses of Hemp). It is also used for fiberglass substitutes, due to the hemp fibers being stronger, lighter, biodegradable, and cost less to produce. Hemp is also used for injection-molded products, and resins from the oil of hemp (Herb Resources: The Many Uses of Hemp).

Hemp was used to eat the Chernobyl wastes that occurred in the Ukraine on April 26th, 1986. Hemps use, along with new technology such as phyto-remediation, decontaminated the soil that is radioactive in this area (Charkowski, 1998-1999). Phyto-remediation is the process of growing plants on toxic soil to cause the removal of the toxins that are present (Help to RemEDIATE New York Garden Soil). This process can be done on any soil that is contaminated, with hemp plants being the best to use. The research scientist Slavik Dushenkov stated that “Hemp is proving to be one of the best phyto-remedative plants we have been able to find,” (Charkowski, 1998-1999). Even though the Chernobyl incident was many years ago, there are over 30,000 sits in the United States that need hazardous waste treatment and could benefit from the use of industrial hemp to remove the toxins, including Three Mile Island and Hanford (Charkowski, 1998-1999). In New York, the garden soil that was toxic was going to be freed of the toxins using phyto-remediation (Help to RemEDIATE New York Garden Soil). Despite the necessity, industrial hemp is still illegal to be grown in the United States due to the myth of it being a drug (Charkowski, 1998-1999). Instead, the soil has to be carried away and replaced with good soil, or mushrooms can be used to phyto-remediate the area; but, it has been shown that hemp is the best plant to use for this process (Help to RemEDIATE New York Garden Soil).

Foods can be made out of hemp, such as salad dressings, butters, beers, soups, cakes, cereals, protein bars, breads, milk, shakes, and many more (Soiferman, 2012). It is incorporated into many foods in order to provide nutritional value (Herb Resources: The Many Uses of Hemp). Being easily digestible and long lasting, along with containing essential fatty acids and amino acids, hemp is a healthy food product to incorporate into meals. The health benefits are described more below. Hemp is also incorporated into organic pet foods, including dogs, cats, horses, cows, birds, and chickens food, due to its healthy essential proteins and Vitamin A that are good for pets (Herb Resources: The Many Uses of Hemp).

Hemp can be used instead of trees for paper, since it contains as much cellulose as trees do, with hemp containing 77% cellulose and trees containing only 60% cellulose. Once
hemp is made into pulp, it is the same as wood pulp in texture (Soiferman, 2012). Making paper out of hemp is a smart idea since it would prevent trees from being cut down, and the quality of hemp paper is better than wood paper, as it is resistant to decomposition, and as it ages, it does not turn yellow (Herb Resources: The Many Uses of Hemp). Due to hemp’s color, a solution that is gentler such as hydrogen peroxide can be used instead of chlorine bleach. Also, only 2.5 acres of hemp are needed to produce the same amount of paper that 9.9 forest acres could produce (Herb Resources: The Many Uses of Hemp).

Since hemp is lower in lignin than wood, hemp contains less chemicals than wood does (Herb Resources: The Many Uses of Hemp). It can be used as an alternative to wood products, being an environmentally-friendly option. Hemp can be used as an alternative to wood in construction materials such as some fiberboards, beams, studs, posts, with hemp being stronger than wood made from fiberboards (Herb Resources: The Many Uses of Hemp).

Hemp is resistant to disease and insects so no pesticides would be needed to grow hemp. It can be grown best on land where corn is grown, but is diverse, and able to grown in many different soils. It is the number one biomass product that is made on earth. There is also a large amount of hemp produced from a hemp stalk in only a short amount of time, with 3 to 7 tons of dry hemp stalk produced per acre (Soiferman, 2012).

Hemp can be used for bio-diesel fuel, causing carbon monoxide emissions that are 47% lower than those from diesel cars. Hemp could slow down global warming, since the carbon dioxide that burning hemp releases is exactly alike what plants take in from the environment, making a closed carbon cycle (Soiferman, 2012). Hemp could be used in “green” vehicles since it produces methanol and burns clean, unlike gasoline. It can produce alternative fuel sources such as biodiesel and ethanol. Therefore, using hemp would cause the non-polluting of the atmosphere, due to the hydrocarbons being of a renewable source, with both the seeds and fiber being used as a fuel source (Herb Resources: The Many Uses of Hemp).

As an oil, hemp is used in body care products such as lotions, lip balms, bath oils, shampoos, etc. The Body Shop, which is located in most malls, sells body care products that are made from hemp, along with Revlon having hemp oil in their makeups, shampoos, and lotions. It is also used as a natural alternative to household cleaners (Soiferman, 2012). Hemp has also been used to cure dermatitis along with other skin conditions (Herb Resources: The Many Uses of Hemp). Using hemp on the skin in a lotion and soap form is useful since it is a green product, containing no toxins and chemicals that could harm the skin (Herb Resources: The Many Uses of Hemp).

Hemp was used in clothes and is a better material to use than cotton, since it is safer to grow not needing fertilizers or pesticides; it is warmer than cotton; it is water absorbent; it is flame retardant; it is softer than cotton; and is more durable than cotton (Soiferman, 2012). Also, hemp can be grown in areas where cotton cannot be grown; along with hemp being weather and mold resistant, and a cost-effective alternative (Herb Resources: The Many Uses of Hemp).
The Many Uses of Hemp). Hemp is also versatile, so it can be blended with other fabrics like silk and cotton (Herb Resources: The Many Uses of Hemp). Nike, Polo Ralph Lauren, and Armani along with many other companies, have made clothes out of Hemp (Soiferman, 2012). Therefore, hemp is a diverse item that can be used in many areas of society, including in food, clothes, body care products, and fuel.

The Nutritional Significance of Hemp (NP)

No other plant source, out of the 3 million plus edible plants that are grown on earth, can compare nutritionally to hemp (Soiferman, 2012). It is eaten as hemp seeds, protein powder, or oil extract that is taken from the seeds. Hemp is a healthy food to consume, as it contains 44% protein, 39% unsaturated and 5% saturated fat, 33% protein, 12% carbohydrates, 6% ash, and 5% moisture (Leson). The seeds of hemp contain 25-35% oil by weight, which is a non-trans-fatty-acid oil that contains a high amount of the essential fatty acids, including omega-3, 6, and 9 (Soiferman, 2012). The major omega-6 and omega-3 polyunsaturated fatty acids (PUFA) that hemp contains are linoleic acid (LA) and alpha-linolenic acid (LNA), that are in a ratio of 3:1 of LA to LNA, which is optimal for nutrition (Leizer et al., 2000). It also contains gamma-linolenic acid (GLA), making it superior nutritionally when compared to other seed oils (Leizer et al., 2000). Hemp seed benefits the cardiovascular health of people, and has been studied on animals to see the effects it had on heart disease, platelet aggregation, and other things related to cardiovascular health. It seems to be beneficial in reducing cardiovascular disease due to its high content of essential fatty acids (Rodriguez-Leyva et al., 2010).

Hemp contains 33% protein (MUSTE , 2009). It is the only plant that contains all the essential amino acids in a form that is easily digestible (Osburn, 1992). This is because 65% of the protein hemp contains is “edestin,” a protein that is easily digestible and is also a pre-cursor to hormones, enzymes, hemoglobin, and antibodies that are body components. The protein content of hemp is comparable to that of soybeans, and is higher than that which is found in other seeds and nuts. It is one of the closest to a complete protein than all the other seeds, except for the soybean. It is also 35% dietary fiber, which is high in the antioxidants Vitamin C, E, and chlorophyll, along with being a commercial flour grain (Soiferman, 2012). Hemp is a highly nutritious food and is more healthy then a lot of sources of fats and proteins. It contains more of the essential fats and proteins then fish and flax oil supplements and protein powders. Hemp also tastes better than many of these supplements, with its nutty flavor, so is a delicious addition to cooking (Leson). Globulin is an important protein in humans, and hemp contains 65% globulin (Osburn). Globulin is a protein that is divided into the classes alpha, beta, and gamma globulins. The alpha and beta globulins are transport vehicles in the body that carry proteins; whereas the gamma globulins are immunoglobulins, antibodies that work as a defense system against infections and disease (Osburn). These globulins are made in the body from the amino acids we consume. It is important to eat foods high in globulin proteins to ensure that our body gets the correct amount of amino acids to make globulins (Osburn). Since hemp contains 65% globulin edestin along with albumin it is in a form that can easily be taken up into the blood and utilized (Osburn). This makes hemp important, as it can heal people with deficiency diseases by providing the correct amount
of amino acids. In the past, hemp has treated the tuberculosis nutritional deficiencies (Osburn). Therefore, hemp is an important food item nutritionally, by providing the correct amount of amino acids to keep the body healthy and the immune system ready to fight diseases and infections.

Hemp seeds also contain trace amounts of torium, strontium, arsenic, chromium (Muste, 2009). Along with these, hemp also contains a large amount of vitamin E in alpha- , beta-, gamma-, and delta-tocopherol forms (Muste, 2009).

There are no negative health effects from consuming hemp seed oil, as one study found (Leizer et al., 2000). This is due to the fact that hemp seed oil is so nutritiously good for humans with its high ratio of LA:LNA fatty acids, which most seed oils do not contain. There is no toxicity from ingesting hemp seed oil, not even from consuming the contaminants that are from the cannabinoids (Leizer et al., 2000).

**Hemp Used in Cooking and Baking (NP)**

If baking with hemp flour, the amount of hemp used is important. No more than 15% of hemp flour should be used when baking, because a larger amount could cause the product to be dark green with a bitter taste that is a specific trait of hemp flour. Hemp contains 30% protein (Muste, 2009). Also, hemp flour contains a protein composition that is not gluten as wheat flour is, but is structurally and biologically active (Muste, 2009). Therefore, when using hemp flour in cooking, along with other flours or seeds, it is important to consider the ratio of each flour or seed used to obtain the optimal flavor and consistency.

The use of hemp powder in energy bars was examined in one study to see how hemp powder affected the physicochemical and antioxidant properties of the bars (Norajit et al., 2011). The hemp powder was mixed with rice flour in three different levels of hemp (0%, 20%, 30%, and 40%) to study its effects on the energy bars. The energy bars were also tested with a taste panelist to see if people preferred the rice flour energy bar more without hemp, or with the different levels of hemp in them. The results showed that the flour with hemp had a lower water absorption index than the control, which was the rice flour without any hemp (Norajit et al., 2011). As higher amounts of hemp powders were added to the rice flour, the samples had a lower moisture content and carbohydrate content, and therefore contained higher amounts of fat, protein, and ash as the hemp content increased (Norajit et al., 2011). Also, the rice flour with whole hemp added to it, contained a higher amount of fat and ash contents than the rice with the defatted hemp powder. The rice flour with low amounts of hemp added to it had a higher expansion level than the rice flour with the defatted hemp added. The defatted hemp contains more fibre, so can rupture more easily, causing the flour to expand less when more hemp powder is added to it (Norajit et al., 2011). The rice flour with 40% hemp powder added to it had the highest potential to inhibit beta-carotene oxidation (Norajit et al., 2011). The rice flour with hemp powder added at any level, contained more phenolics and flavonoids, which are antioxidants, than the energy bar with the rice flour alone (Norajit et al., 2011). As the level of hemp powder added to the rice flour increased, there
became a lower equilibrium moisture content of the energy bars (Norajit et al., 2011). The energy bar that was liked the most based on taste, color, and overall acceptability was the rice flour with 20% hemp powder added to it (Norajkit et al., 2011). Seven energy bars overall were tested for their overall acceptance. The energy bar made from the rice flour with the defatted hemp was not liked as much as the rice flour with the whole hemp, showing the importance in using the whole hemp seeds in cooking. Also, the flavor of the energy bar with rice flour and 40% whole hemp was too strong of a flavor. The energy bar with 20% whole hemp was liked the most (Norajit et al., 2011). This study showed that the amount of hemp added to energy bars is important in order to make a product that is flavorful, has the correct color, and retains the correct chemical properties; also, hemp used in energy bars adds nutritional quality.

**The Process Used to Remove Oil from Hemp Seeds** (NP)

A press is used to extract oil from the hemp seed. A press has a worm-shaft that slowly rotates and squeezes that oil out, and separates out the seed cake that is remaining. To reduce oxidation, the process is conducted in an oxygen-free environment (Hemp Oil). Most oils that companies sell have contaminants in them, and contain little to no THC (Simpson). It is better to make your own hemp oil unless you know how the oil is extracted. Distilling can be done to extract the oil from the hemp seed and to purify it from home (Simpson).

Usually when oils are removed from seeds and put on supermarket shelves, the shelf-life has to be increased by treating them with a mechanical and chemical refining process. This process removes undesirable compounds, while increasing its shelf-life. The steps done to make commercial oil include solvent extraction of the oil from the seeds, degumming, alkali refining, bleaching deodorizing, hydrogenation, and more (Pless et al., 1998). Most oils on the shelves are cold-pressed and refined, including canola oil, causing them to taste bland. The oils that are unrefined, such as hemp oil, and cold-pressed have a nutty delicate flavor compared to the refined oils (Pless et al., 1998). This is because unrefining the oils causes the oils to retain their nutty flavor, while still containing their antioxidants, vitamins, and minerals. But, being unrefined means they contain more unsaturated fatty acids, so can go rancid quicker (Pless et al., 1998). Therefore, unrefined, cold-pressed oils like hemp oils, are pressed more, bottled in an atmospheres of nitrogen, and sold in bottles that are dark or tinted to protect them from light that can cause rancidity (Pless et al., 1998).

**Where Companies in America Buy their Hemp from** (NP)

Hemp seeds that are sold in the United States, get their hemp from different countries. Nutiva sells organic hemp seeds, which they buy from Canada since it is illegal to grow them in the United States. The hemp seeds from Nutiva are cold-pressed (under 104°F) and the oxygen is removed to protect the fatty acids in the hemp and keep the freshness of the seeds. A mechanical process is used to remove the hard shells of the raw seeds (Nutiva). Z Natural Foods also gets their hemp seeds from Canada, which seems to be the place to get them from. This brand is also organic and uses low temperature drying
techniques to keep the nutrients that the hemp seeds have. This company also tests their products for microbiological and chemical contaminants, heavy metals, and botanical identity (Z Natural Foods).

The product Navitas Natural Organic Hemp Protein Powder, made from Navitas is located in Canada and gets their hemp seeds from Canada. It is $17 per 16 oz of it, and is made with pure hemp seeds that are vegan, organic, raw, kosher, and free of fillers or additives (Navitas, 2013). These seeds are eco-friendly with green nutrition and pack a pure plant nutrition, as the site states, full of protein, fiber, omega fatty acids, antioxidants, and minerals (Navitas, 2013). This company’s products are organic and use freeze-drying to process their seeds, which is a minimal processing method that protects the flavor and nutrients in their superfoods (Navitas, 2013).

**How Hemp is Cleaned (Purified) before it is Sold**

Due to what hemp is made of, it does not need pesticides or fertilizers to grow it, so does not need to go through the normal cleaning process that other plants go through? Hemp is resistant to disease and insects so no pesticides would be needed to grown hemp (Soiferman, 2012).

**Hemp Seed Compared to other Seeds**

Hemp is a nutritionally superior food, along with being a very diverse plant product that can be used for an array of things as previously described. No other seed seems to have all the benefits that hemp has. Hemp is similar nutritionally to Soybeans, but hemp is more pure, with less contaminants and pesticides in it (Hemp Products and Hemp Benefits). Hemp seeds are second to soybeans in terms of vegetable protein content. But, hemp is digested easier, along with lasting longer than soybeans do (Hemp Products and Hemp Benefits). Overall, hemp seeds are more valuable in their nutrient content than soybeans, with hemp seeds containing 30% protein, 65% of which is easily digested protein (Muste, 2009). These characteristics of hemp seeds also make it a good food for vegetarians to consume, since hemp can replace the lack of animal protein in their diet (Muste, 2009).

Hemp oil has a highly favorable ratio of essential fatty acids, 3:1, with three parts linoleic acid to one part alpha-linolenic acid (Pless, 1998). Flax seed oil does not have the same favorable ratio, despite its higher content of essential fatty acids, since its ratio is 1:5 (Pless, 1998). Also, flax seed oil does not contain the unsaturated fatty acid gamma-linolenic acid, which hemp oil is abundant in (Pless, 1998).

**A product similar to ours that is under development and other products**
Ever Bar- the gluten free hemp protein bar, created by Alex Abdalla and Kevin Saliba is a product similar to ours, using natural ingredients. This product is under development, raising money and furthering awareness of their product. They have recently met their quota and are beginning to further their line of product. This is a similar technique we would have to take to further our hemp granola bar. Below is a link to the ever bars video about their product:


Nature’s Path sells a hemp granola bar called Sunny Hemp, that is organic and non-GMO verified. The granola bar contains organic hemp seeds, sunflower seeds, granola, and raisins. On the site, it says that each 35 g serving of the hemp granola bar contains 3g fiber, 12g grains, 3g protein, and is an excellent source of ALA Omega-3. A marijuana leaf is on the front of the box along with a picture of the granola bar. This box is an Envirobox, meaning it is 36% smaller than the standard 6.2 oz box. This hemp granola bar is sold in most grocery stores in the United States. You can order a 7.4 oz box of the granola bars from the natures path website for $3.99. A 6-pack containing 6 of the 7.4 oz boxes is $19.94 online (Nature’s Path Organic, 2013).

Swiss Hemp Iced Tea is an iced tea made by CSwiss, which uses hemp blossoms, black tea, and lemon juice to give their tea its hemp aroma. They also have a variation of the tea, made with hemp seeds extract, lemon juice, black tea, and mixtures of natural flavorings. CSwiss is the first company that used hemp in iced teas. Their product originated in Switzerland. The can that their hemp iced tea is in is made of paper, and is a pioneer in the antiseptic can, cardboard packaging field, being made of eco-friendly materials. The can contains a marijuana leaf on the front. This tea was first sold in the United States in 2010, with a CSWISS USA now located in Miami, Fl (CSWISS, 2013).

Recent Bill on Hemp (NP)

The Industrial Hemp Farming Act of 2013 amended the previous bill on hemp, by making industrial hemp a term separate from “marijuana.” Industrial hemp, as this bill defines it, is “the plant Cannabis sativa L. and any part of such plant, whether growing or not, with a delta-nine tetrahydrocannabinol concentration of no more than 0.3 percent on a dry weight basis. Deems Cannabis sativa L. to meet that concentration limit if a person grows or processes it for purpose of making industrial hemp in accordance with state law,” (beta.congress.gov). Therefore, industrial hemp has recently been defined separately from marijuana, which is a large step forward.

Service Project- Meina Karimi, Nicole Parello

Service Project (MK)
The service project has been determined to be a public-awareness project as well as one that demonstrates the product that will be created. What was thought of is that there will be locations chosen with large amounts of people that pass through every day. Options for these locations could be in campus centers, in frequently-visited stores. In those places, there will be a table with a display or sign of some sort to attract the attention of the passersby. Because hemp is usually associated with marijuana, that can be a main topic to inform the testers of and also other people.

Though hemp is a type of cannabis, it is not the same cannabis grown for recreational marijuana, and many people do not realize this. *Cannabis sativa* is the type that is mainly used for hemp and will most likely be used here. *Cannabis indica* is the plant that is used for recreational marijuana. The difference between these way these two are used is by the level of cannabinoids they contain. Both contain THC (delta-9-tetrahydrocannabinol), which is the active psychotropic ingredient that produces the feeling of being high. *Cannabis indica* has a potency rate of 3% to 20%, while *sativa* has one of less than 1%. This makes it unable to produce the effect that marijuana users look for. Instead, hemp contains high levels of another cannabinoid called cannabidiol (CBD). CBD blocks the effect of being high, which essentially makes hemp the anti-marijuana. The levels of THC in recreational marijuana are high, and the CBD levels are low, allowing for the . The inverse is true for hemp, which does not make it a suitable source as a drug and therefore does not pose the risk of becoming an illegal and illicit substance to be abused.

If this is focused on as a topic for informing people, it is possible that it will help people to be more open-minded to the idea of hemp in the bars that will be made. While educating the testers about hemp and its benefits, the gluten-free protein bars made with hemp will be presented and those willing will be able to try a sample, and a survey of some sort will be given to determine the popularity of the taste with those who try it. As a comparison, regular protein bars will be used side-by-side and the testers can also try those to more accurately assess their feelings about the hemp-based protein bars. The data collected from the surveys can then be used in turn with the service project by using the statistics (if they are favorable) in order to entice people to try the product and spread the word about hemp-based bars and products.

The initial hard part of this project might be to find people to try the product, though many may be enticed by the fact that it will be made with hemp. However, the rest of the bar will be made with common ingredients in other health bars, such as honey, seeds and nuts. This is based off of a recipe that was found online of someone’s gluten-free protein bar, and we will add the hemp to it in and adjust some of the ingredients to better suit the taste. There are many companies already producing such bars, but they are not well known and are quite expensive. This is also another issue to tackle, because the high price of hemp-based items can be a turn-off for customers.

Some are wary of the meaning of using hemp while others will be intrigued by the fact that it involves a relative of recreational cannabis. If we can get people to test the product and hopefully enjoy it, it would be highly beneficial because word of mouth is the best way to spread information about products and receive attention for it. Ultimately, the goal of the project is to create a more positive and known view of hemp because currently, it is only
associated with marijuana, which usually carries a negative connotation with it. Hemp is very beneficial to people and because not much information is given about it, that is not known. We hope to enlighten people about the benefits and capabilities that hemp has in order to spread public awareness and show people that other alternatives are available for the foods they eat and the vitamins they want, and in a more organic and healthy way as well. The properties of hemp make it a valuable plant to invest time and money into, and if it becomes more popular amongst people, the demand will be greater and the price for it will go down based on the scheme of supply and demand, and it will one day, hopefully, be a regular item in grocery stores everywhere. Right now in America, it cannot be grown legally due to the negative correlation between it and recreational marijuana, but if enough people demand progress in areas concerning hemp, America may be able to start growing its own share of it and invest in the natural wealth it possesses.

Letter to the Editor (MK)

April 10th, 2013
To the editor of The Jersey Journal

Subject: A revolutionary way to enhance nutritional intake

My name is Meina Karimi and my partner’s name is Nicole Parello. We are both upperclassmen here at Rutgers University. We are both students of science and are currently enrolled in an ethics class with Dr. Julie Fagan. It is in this class that we were split into groups based upon an issue that concerned us in order to find an effective solution to the problem.

My classmate and I agreed upon the topic of health in general, since it is a very important matter that concerns everyone. What we wanted to do in this amazingly broad field was hard to decide, but we then came up with the idea of involving hemp in a common food product, which in this case, is a granola bar.

This idea may sound a bit odd and even possibly illegal, but rest assured, as everything about this is completely approved. In fact, hemp is a nutritional goldmine, with all the essential amino acids needed for maintaining a healthy life, as well as many different vitamins and minerals. The nutritional benefits of hemp are astounding, and this is the reason why we chose it to be in a bar that will be high in protein and nutrition, as well as being gluten free. Not many people know of the possibilities that hemp has, and that was the main motivating factor to use it. The two main purposes of this project are to test out a new kind of bar that both tastes good and is effective in helping people to reach and maintain healthy lifestyles, while also promoting and advocating the use of hemp for its benefits. Hemp is currently not allowed to be grown in America, though it does not have the same properties of its cousin, marijuana. If more people know about the benefits of hemp, it could be possible to start a movement and spark a change on the view of hemp and its availability, which would ultimately make it a more popular substance to be used in foods and thus increase the nutritional value of food items.
This cause is one that involves the public’s help and health and for it to be successful, the public needs to know the facts and potential they can gain. People that are willing to test out the granola bars being made and rate their satisfaction are needed in order to create a suitable product that can be marketed publicly to spread the cause.

Thank you,
Meina Karimi
Nicole Parello

Letter to the Senators

Nicole Parello, Meina Karimi
Nichol Ave
New Brunswick, NJ 08901
April 22, 2013

Senator

Dear Senator:

We are students at Rutgers’s University and have recently written a paper on hemp granola bars. During our research, it came to our attention that hemp is illegal to grow in the United States. The reasons behind this do not seem to suffice. It is not only nutritionally superior, but also a very diverse product used to make fabric, fuel, paper, and more. We believe the growing of hemp in the United States should be legalized, and we ask you to make to bring this issue to the surface.

Hemp was banned from being grown in the United States in 1937, when marijuana was made illegal (Reeves, 2012). This was done despite the fact that hemp does not contain enough THC to make a person ‘high’. Industrial hemp is the Cannabis plant that contains no more than 0.3 percent THC in its leaves and flowering heads. It has derivatives of its seeds that include oil and seedcake. It does not contain non-viable Cannabis seed, and does not contain the mature stalks or fibres from the stalks; but it includes derivatives of its seeds. This industrial hemp with its low THC and high CBD is grown in Canada, effective on March 12, 1998 (West, 1998). Industrial hemp is therefore a different strain of the Cannabis plant, which cannot get people high, and should be legal to grow everywhere.

Hemp can be imported into the United States to consume, process, and wear it; but hemp cannot be grown industrially for food, fabric, paper, or oil. This is thought to be because hemp was a competitor with synthetic fiber, plastics, and paper industries made in the United States; so it was banned from being grown (Soiferman, 2012). This shows that hemp is not legal in the United States mainly due to politics.
Hemp actually benefits the ground which it grows on. It reduces deforestation, while also improving the soil it is grown upon; along with this, products made from hemp are recyclable, biodegradable, and compostable making them easy on the landfills (Soiferman, 2012). This is because hemp is able to breathe and is biodegradable, along with being a renewable source (Herb Resources: The Many Uses of Hemp). Being rich in cellulose, hemp has become popular for its use in biodegradable plastic products (Herb Resources: The Many Uses of Hemp). It is also used for fiberglass substitutes, due to the hemp fibers being stronger, lighter, biodegradable, and cost less to produce. Hemp is also used for injection-molded products, and resins from the oil of hemp (Herb Resources: The Many Uses of Hemp).

Foods can be made out of hemp, such as salad dressings, butters, beers, soups, cakes, cereals, protein bars, breads, milk, shakes, and many more (Soiferman, 2012). It is incorporated into many foods in order to provide nutritional value (Herb Resources: The Many Uses of Hemp). Being easily digestible and long lasting, along with containing essential fatty acids and amino acids, hemp is a healthy food product to incorporate into meals. The health benefits are described more below. Hemp is also incorporated into organic pet foods, including dogs, cats, horses, cows, birds, and chickens food, due to its healthy essential proteins and Vitamin A that are good for pets (Herb Resources: The Many Uses of Hemp).

Hemp can be used instead of trees for paper, since it contains as much cellulose as trees do, with hemp containing 77% cellulose and trees containing only 60% cellulose. Once hemp is made into pulp, it is the same as wood pulp in texture (Soiferman, 2012). Making paper out of hemp is a smart idea since it would prevent trees from being cut down, and the quality of hemp paper is better than wood paper, as it is resistant to decomposition, and as it ages, it does not turn yellow (Herb Resources: The Many Uses of Hemp). Due to hemp’s color, a solution that is gentler such as hydrogen peroxide can be used instead of chlorine bleach. Also, only 2.5 acres of hemp are needed to produce the same amount of paper that 9.9 forest acres could produce (Herb Resources: The Many Uses of Hemp).

Since hemp is lower in lignin than wood, hemp contains less chemicals than wood does (Herb Resources: The Many Uses of Hemp). It can be used as an alternative to wood products, being an environmentally-friendly option. Hemp can be used as an alternative to wood in construction materials such as some fiberboards, beams, studs, posts, with hemp being stronger than wood made from fiberboards (Herb Resources: The Many Uses of Hemp).

Hemp is resistant to disease and insects so no pesticides would be needed to grow hemp. It can be grown best on land where corn is grown, but is diverse, and able to grown in many different soils. It is the number one biomass product that is made on earth. There is also a large amount of hemp produced from a hemp stalk in only a short amount of time, with 3 to 7 tons of dry hemp stalk produced per acre (Soiferman, 2012).
Hemp can be used for bio-diesel fuel, causing carbon monoxide emissions that are 47% lower than those from diesel cars. Hemp could slow down global warming, since the carbon dioxide that burning hemp releases is exactly alike what plants take in from the environment, making a closed carbon cycle (Soiferman, 2012). Hemp could be used in “green” vehicles since it produces methanol and burns clean, unlike gasoline. It can produce alternative fuel sources such as biodiesel and ethanol. Therefore, using hemp would cause the non-polluting of the atmosphere, due to the hydrocarbons being of a renewable source, with both the seeds and fiber being used as a fuel source (Herb Resources: The Many Uses of Hemp).

As an oil, hemp is used in body care products such as lotions, lip balms, bath oils, shampoos, etc. The Body Shop, which is located in most malls, sells body care products that are made from hemp, along with Revlon having hemp oil in their makeups, shampoos, and lotions. It is also used as a natural alternative to household cleaners (Soiferman, 2012). Hemp has also been used to cure dermatitis along with other skin conditions (Herb Resources: The Many Uses of Hemp). Using hemp on the skin in a lotion and soap form is useful since it is a green product, containing no toxins and chemicals that could harm the skin (Herb Resources: The Many Uses of Hemp).

Hemp was used in clothes and is a better material to use than cotton, since it is safer to grow not needing fertilizers or pesticides; it is warmer than cotton; it is water absorbent; it is flame retardant; it is softer than cotton; and is more durable than cotton (Soiferman, 2012). Also, hemp can be grown in areas where cotton cannot be grown; along with hemp being weather and mold resistant, and a cost-effective alternative (Herb Resources: The Many Uses of Hemp). Hemp is also versatile, so it can be blended with other fabrics like silk and cotton (Herb Resources: The Many Uses of Hemp). Nike, Polo Ralph Lauren, and Armani along with many other companies, have made clothes out of Hemp (Soiferman, 2012). Therefore, hemp is a diverse item that can be used in many areas of society, including in food, clothes, body care products, and fuel.

No other plant source, out of the 3 million plus edible plants that are grown on earth, can compare nutritionally to hemp (Soiferman, 2012). It is eaten as hemp seeds, protein powder, or oil extract that is taken from the seeds. Hemp is a healthy food to consume, as it contains 44% protein, 39% unsaturated and 5% saturated fat, 33% protein, 12% carbohydrates, 6% ash, and 5% moisture (Leson). The seeds of hemp contain 25-35% oil by weight, which is a non-trans-fatty-acid oil that contains a high amount of the essential fatty acids, including omega-3, 6, and 9 (Soiferman, 2012). The major omega-6 and omega-3 polyunsaturated fatty acids (PUFA) that hemp contains are linoleic acid (LA) and alpha-linolenic acid (LNA), that are in a ratio of 3:1 of LA to LNA, which is optimal for nutrition (Leizer et al., 2000). It also contains gamma-linolenic acid (GLA), making it superior nutritionally when compared to other seed oils (Leizer et al., 2000). Hemp seed benefits the cardiovascular health of people, and has been studied on animals to see the effects it had on heart disease, platelet aggregation, and other things related to cardiovascular health. It seems to be beneficial in reducing cardiovascular disease due to its high content of essential fatty acids (Rodriguez-Leyva et al., 2010).
Hemp contains 33% protein (MUSTE, 2009). It is the only plant that contains all the essential amino acids in a form that is easily digestible (Osburn, 1992). This is because 65% of the protein hemp contains is “edestin,” a protein that is easily digestible and is also a pre-cursor to hormones, enzymes, hemoglobin, and antibodies that are body components. The protein content of hemp is comparable to that of soybeans, and is higher than that which is found in other seeds and nuts. It is one of the closest to a complete protein than all the other seeds, except for the soybean. It is also 35% dietary fiber, which is high in the antioxidants Vitamin C, E, and chlorophyll, along with being a commercial flour grain (Soiferman, 2012). Hemp is a highly nutritious food and is more healthy then a lot of sources of fats and proteins. It contains more of the essential fats and proteins then fish and flax oil supplements and protein powders. Hemp also tastes better than many of these supplements, with its nutty flavor, so is a delicious addition to cooking (Leson). Globulin is an important protein in humans, and hemp contains 65% globulin (Osburn). Globulin is a protein that is divided into the classes alpha, beta, and gamma globulins. The alpha and beta globulins are transport vehicles in the body that carry proteins; whereas the gamma globulins are immunoglobulins, antibodies that work as a defense system against infections and disease (Osburn). These globulins are made in the body from the amino acids we consume. It is important to eat foods high in globulin proteins to ensure that our body gets the correct amount of amino acids to make globulins (Osburn). Since hemp contains 65% globulin edistin along with albumin it is in a form that can easily be taken up into the blood and utilized (Osburn). This makes hemp important, as it can heal people with deficiency diseases by providing the correct amount of amino acids. In the past, hemp has treated the tuberculosis nutritional deficiencies (Osburn). Therefore, hemp is an important food item nutritionally, by providing the correct amount of amino acids to keep the body healthy and the immune system ready to fight diseases and infections.

There are no negative health effects from consuming hemp seed oil, as one study found (Leizer et al., 2000). This is due to the fact that hemp seed oil is so nutritiously good for humans with its high ratio of LA:LNA fatty acids, which most seed oils do not contain. There is no toxicity from ingesting hemp seed oil, not even from consuming the contaminants that are from the cannabinoids (Leizer et al., 2000).

The Industrial Hemp Farming Act of 2013 is the most recent act written on this issue, which amended the previous bill on hemp, by making industrial hemp a term separate from “marijuana.” Industrial hemp, as this bill defines it, is “the plant Cannabis sativa L. and any part of such plant, whether growing or not, with a delta-nine tetrahydrocannabinol concentration of no more than 0.3 percent on a dry weight basis. Deems Cannabis sativa L. to meet that concentration limit if a person grows or processes it for purpose of making industrial hemp in accordance with state law,” (beta.congress.gov). Therefore, industrial hemp has recently been defined separately from marijuana, which is a large step forward.

Therefore, industrial hemp should be legalized. As a senator, I ask you to bring this issue forward. Such a superior plant that is nutritionally perfect, is good for the ground, can be used for fuel, can be added to food, clothes made from it, and paper from it, should not be
illegal to grow in the United States. This issue has been pushed to the side for too long. It is time we come out and solve this issue and legalize industrial hemp growing in the United States.

Thank you for your time.

Sincerely,
Nicole Parello, Meina Karimi

References:


