



Chinese Ideogram "Ma"

Two hemp plants hang under a drying hut roof.

*It is said that the Buddha once lived
for six years by eating
just one Hempseed a day.*

Preface

In what is now northwest China 10-15,000 years ago, humans first began to plant seeds. Along with millet and rice, a tall leafy plant called *ma* (above) was one of the first foods cultivated. Its seeds, rich in energy, were also an early fuel source. The same plant was the first crop grown for textile fiber. Its stalks give the strongest natural fibers known. Cloth made from the outer fiber has been dated as over 9000 years old. And long before it was planted anywhere, the plant grew wild, and likely was used for ropes, nets, and snares. When paper-making was invented, the fibrous stalks had yet another use.

Ma has names in every language; in most, several. Many are variations on Greek *kanabis*, itself probably from ancient Assyrian *quunubu* or *qunupu*, one of the oldest words surviving in modern times. Many Afro-Eurasian texts, from Egyptian papyrus scrolls to Mesopotamian clay tablets, discuss medical uses of this plant as though it had been in use long before they were written. Assyrian medical texts 4000 years old give no sign that its uses were recent discoveries. Greek and Roman texts mention experiments to find new uses for what was by then a very familiar medicine.

Leonhard Fuchs gave the plant its now-standard Latin name, *Cannabis sativa*, "useful cannabis," in 1542 CE.¹ In English it was "cannabis hemp" (from German *hanf*) from early Anglo-Saxon times until the 1920s, when certain competing interests in the United

¹ Russo E. History of *Cannabis* and its preparations in saga, science, and sobriquet. *Chemistry & Biodiversity*. 2007;4:1614-1648.

States began to call it by a Mexican slang term: *marihuana*. We call it cannabis, or hemp, or marijuana.

For thousands of years hempseed was an important food for nutrition and good health not only in China, but from India to Siberia and west to England. It crossed the Atlantic Ocean with early explorers and "New World" settlers of every nationality and status, but had been known in the West from time immemorial.²

In the 1920s, 30s, and 40s, anti-"*marihuana*" campaigns virtually erased hempseed's culinary uses from popular culture, history, and knowledge, and from the world's tables. Hempseed and other "old-fashioned" whole foods were bypassed for bleached flour, refined sugar, "stabilized" oil, and other foods made commercially rather than locally or at home.

Today, new research, especially in Israel, Spain, Brazil, and Great Britain, is finding new medical uses for cannabis' unique compounds, including those in hempseed. Hempseed's linoleic acid content has anti-inflammatory properties. Hemp oil relieves atopic dermatitis (eczema).³ Hempseed and hempseed oil have shown benefits in multiple sclerosis patients.⁴

Use of environmentally friendly hemp fiber for textiles, paper, and even construction materials and auto parts is rising. Hemp's

² Craker LE, Gardner Z. The botany of Cannabis. **The Pot Book**, ed. Holland J. Park Street Press, Toronto. 2010. Unfortunately, what was known by Native Americans before Europeans found the Western Hemisphere is unclear today. It seems unlikely that there was a strong tradition of medicinal use, however, due to a prehistoric division of the Cannabis plant into two major types: one best at producing strong fibers; the other best at producing resinous flowers. Although the varieties interbreed with ease, the fibrous variety was prevalent in the New World. In addition, many indigenous herbal medicines are still used traditionally; some are known from the work of Eclectic physicians who learned from Native Americans. But cannabis wasn't added to their "patent medicines" until after the more resinous variety was introduced to Europe, and thence the Americas, from the Far East.

³ Callaway JC, Schwab U, Harvima I, et. al. Efficacy of dietary hempseed oil in patients with atopic dermatitis. *Journal of Dermatological Treatment*. 2005;16:87-94.

⁴ Rezapour-Firouzi S, Arefhosseini SR, Farhoudi M, et. al. Association of Expanded Disability Status Scale and cytokines after intervention with co-supplemented hemp seed, evening primrose oils and hot-natured diet in multiple sclerosis patients.

Biolimpacts. 2013;3(1):43-47. Available at:

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3648912>.

cellulose content is a potential source of ethanol; spent fiber is a potential source of biomass fuel. Hundreds of hemp-based products, from soaps, shampoos, and other personal care items to crafters' supplies enjoy robust sales in the US - using hemp grown in Canada, China, and 30 or more other agricultural nations.

Worldwide, prohibitions against "useful cannabis" are falling. In the US 20 states have voted to allow some cultivation of fibrous hemp, but farmers cannot yet grow it due to opposition from the federal Drug Enforcement Administration (DEA).⁵

Hempseed foods have come back too, defeating US government opposition, and are available at most health food stores and some mainstream grocers. However, most are to some degree processed. *It's as if we had canned corn, corn oil, corn syrup, cornstarch, and corn muffins, but no corn on the cob!*

Today the developed world, including the US, is experiencing a health crisis. Diabetes, cancer, heart disease, and other chronic illnesses are increasing. "One out of two Americans will die from... cardiovascular disease (CVD). One out of four... will die from cancer... Pioneers in... biochemistry and human nutrition now believe CVD and most cancers are... caused by... over-consumption of saturated fats and refined vegetable oils that turn *essential fatty acids* (EFAs) into carcinogenic killers... Ignorance of human nutritional needs... will cause [an] overwhelming majority... to die... from these afflictions - the greatest killers in affluent nations."⁶

Is it a coincidence that these chronic conditions began to increase sharply when fresh-pressed oils and whole grains, including those from hemp, disappeared from the typical Western diet?

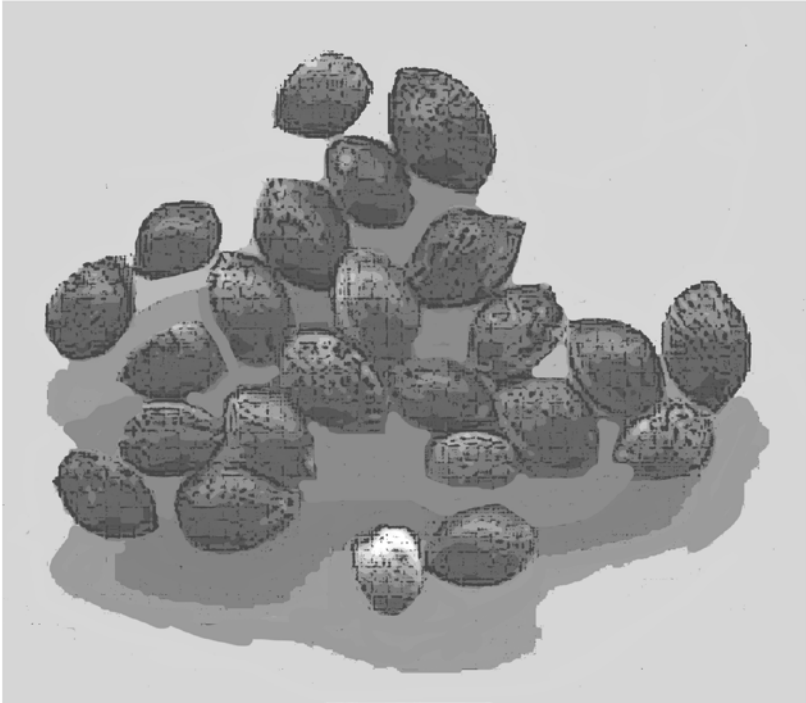
Marketers often advertise "secret" or "new" ingredients to boost their products' appeal. While not at all new, hempseed has

⁵ Johnson R. Hemp as an agricultural commodity. Congressional Research Service. March 21, 2013; RL32725.

⁶ Osburn L. Hemp seed: the most nutritionally complete food source in the world. *Hemp Line Journal*, July-Aug. 1992; I(1):14-15. (*Italics added*.)

become a *real* "secret ingredient," its valuable protein and essential oils lost to most people and underused by the rest. **No more!**

I've selected a variety of recipes for **Hempseed Food**, showcasing the many traditions and techniques this versatile grain can enrich. Read on to learn more about the benefits of using *real, natural hempseed!*





Hempseed: a Functional Food

"**Functional foods**" have potentially positive effects on health beyond basic nutrition. Without doubt, hempseed is a valuable functional food.

Hempseed is the fruit of cannabis, a plant that produces fiber for rope, canvas, fabric, carpets, and paper in an endlessly renewable supply; oil and biomass for fuel; and whose leaves and flowers, if smoked or eaten, produce feelings of euphoria and clarity, sometimes referred to as "being high."

Hempseed, however, doesn't alter the consciousness. It is simply the most nutritious food known to humanity, enjoyed for centuries worldwide. In Dickens' *Oliver Twist*, when Oliver asks, "Please, sir, may I have some more gruel?" he's asking for Hempseed porridge (see **Twisted Hempseed Gruel**, p. 58)! From soup to tasty desserts, Hempseed does it all!

Certain "good fats" contribute to good health. Fresh-pressed "live" oils used for cooking and flavor throughout history were driven from the market in recent decades by cooking oil companies seeking a stable shelf life. Hempseed returns fresh oils to our diet. Just two edible oils (from flaxseed and Hempseed) have significant amounts of EFAs: lin-o-lé-ic (LA; omega-6) and alpha lin-o-lén-ic (ALA; omega-

3), both vital for human life. Hempseed has more LA (21%) and less ALA (7%) than flaxseed (5% LA; 20% ALA). It is about 30-35% oil by weight (**Figs. 1 and 2**). Of all edible oils, only Hempseed has omega-3s, omega-6s, and gamma-linoleic acid (GLA; omega-9). Unlike flaxseed, Hempseed oil can be used continuously without EFA imbalances or deficiencies. Polyunsaturated fatty acids (PUFAs) and phytosterols, found in high amounts in Hempseed, lower risks of heart disease; phytosterols by lowering cholesterol. Hempseed foods legally make regulated "heart healthy" claims in the US. Phytosterols and chlorophyll both add to its anti-cancer component.

Whole Hempseeds have 23% protein (**Fig. 1**) and 17 amino acids, including all 10 *essential amino acids* (EAAs). **That's more than beef!** They have cysteine and methionine, sulfur-bearing EAAs seldom found in plant foods. Hempseed protein is one-third globulin edestin and two-thirds albumins, similar to egg whites, and can be used raw by the body. (Soybeans must be cooked or sprouted for digestion.) Hempseed's 1:2 edestin-albumin ratio may echo prehistoric diets. Its protein is especially valuable for vegetarians and vegans.

Hempseed has vitamins A, C, B-1, B-2, B-3, B-6, D, & E; the nutrients lecithin, choline, & inositol; and minerals potassium, calcium, magnesium, phosphorus, silica, iron, sulfur, & zinc. Hulls are 35% insoluble dietary fiber. Hempseed has no cholesterol.

Can something so healthy still taste good? Yes! Even "junk food junkies" love the rich, nutty taste! But don't worry, hempseeds are *not* nuts, and people allergic to nuts, wheat, soy, and gluten can safely eat them! A low glycemic index, about 35% carbohydrates, and nutrients that help control blood sugar, makes them safe for diabetics as well. Hempseed milk is lactose free. Hempseed has about 500 calories per 100 grams, but few recipes in this book call for as much as 20 grams per serving.

Why is Hempseed a "Secret Ingredient"?

So, if Hempseed is so good, why don't we all eat it? Why is it such a secret? To answer this fully would take a social and political history of the past century, well beyond my humble aims! There are many sources for this information (see *Links & Resources*).

But, hemp was vitally important when the United States was founded. Sailing ships carrying settlers to the New World each used, with their equipment and sailors' clothes and shoes, 30+ tons of Hemp and its products; "Old Ironsides" used 60 tons. Hemp fabric, called "homespun" because every home made it, clothed most settlers. Hemp paper was cheap, acid-free, and sturdy; if books were scarce, they were long-lasting. And Hempseed "grits" and "gruel" were nutritious foods for a growing country. The Founding Fathers knew Hemp was vital to national security and prosperity, America's "moral fiber."

But Hemp competed with some new, developing industries and some old, aristocratic attitudes. In post-Civil War days, when Black people began holding their heads higher than "Jim Crow" liked, smoking Hemp flowers and leaves ("gage"; "reefer") was linked with an "uppity" attitude. Women demanding their rights, especially sexual freedom, were seen as possible "drug addicts." Some Hispanics along the rapidly changing Western US border also used what Mexican rebel leader Pancho Villa called *marihuana*, and some in the US had begun to call "killer weed." Cultural and class conflict would continue to define cannabis' history in the US for 150 years.

An alliance between timber/pulp paper/newspaper baron William Randolph Hearst; the DuPont company, whose Nylon® petrochemical fabric had just been patented; and distillers recovering from Alcohol Prohibition came together in what would today be called *restraint of trade*, linking *marihuana* with undesirable social elements (people of color) and a decline in morals (sexual activity and sassing their elders) among youth. Tobacco and cotton farmers and the new synthetic drug industry also jumped on the anti-"dope" bandwagon.

The first local ordinance against marijuana was passed in 1914 in El Paso, TX, after a fight said to have been started by "a Mexican." By 1937 marijuana was illegal throughout the US, to the surprise of Hemp growers and the American Medical Association, who learned too late that the now-forbidden killer weed was none other than Cannabis Hemp!

Since then a "war on drugs" waged by the US government has sought not only to eradicate this useful plant but all knowledge of it. References to Hemp's once-central place in the economy were methodically scrubbed from textbooks, reference works, and libraries to protect its competitors.

According to NORML, nearly 8 million Americans were arrested for marijuana-related crimes between 2000-2010⁷ alone, mostly for having ("possessing") some cannabis. The number rises yearly. A vast "prison industry" - a phrase that should be obscene! - profits from these arrests. The drug war has also been used as a battering ram against once-sacred civil liberties and the Bill of Rights.

Among the casualties of the war on drugs was Hempseed nutrition. But there was a loophole in anti-Hemp legislation: *exotic bird fanciers convinced Congress in 1937 that many birds needed Hempseed to sing*. Thus, sterilized Hempseed is legally imported for birdseed. It is largely due to this fact, and human curiosity, that the knowledge that Hempseed is both edible and delicious has survived!

This book revives the possibilities of Hempseed foods for everyday cooks. As with any "new" food, the creative cook will adapt these recipes to his or her style, availability of fresh produce, preference in spices, etc. A good cook's imagination, properly stimulated, gives rise to transient masterpieces of taste, texture, color, and aroma. Enjoy good meals in good company, enjoy good health, and "live good"⁸ with Hempseed!

⁷ —. Marijuana prosecutions for 2010 near record high. Sept. 19, 2011.
<http://norml.org/news/2011/09/19/marijuana-prosecutions-for-2010-near-record-high>.

⁸ With a tip of the hat, and fond remembrances of Roland Ord DeNoie, Esq., and Salvation Sandwiches.

* * STOP THE PRESSES!! A Policy Change? * *

Just as this book was being finalized, news broke that the US may have turned a corner in the war on drugs and might be ready to call a truce. On August 29, 2013, US Attorney General Eric Holder announced that the federal government would not seek to overturn citizen-initiated laws allowing recreational cannabis use in Colorado and Washington states, or state laws allowing medical marijuana use. This may even help clear the way for industrial or food-grade hemp agriculture and production! Lower prices for hempseed foods and other hemp products, along with jobs and economic growth, could follow such decisions.

While this announced shift in federal policy comes with several caveats and lacks the force of law, by removing immediate threats of federal intervention from states' decision-making processes, it negates a once-powerful argument against pro-cannabis initiatives and legislation: "*It doesn't matter what we do, the federal government can just overturn it.*" While still technically the case, a window has been opened for states to enact responsible, fair legislation to gain the benefits of cannabis' many attributes.

Notes on "Marijuana"

Though Hempseed can't alter consciousness, if that is your goal, many people find that medicinal and spiritual effects of "marijuana" (cannabis flowers and leaves) are better obtained through digestion than inhalation. Fresh, raw marijuana may be added to almost any food. Its texture and appearance are improved by grinding or chopping before use.

Because marijuana's psychoactive compounds aren't water-but fat-soluble, the most unobtrusive and efficient way to cook with it is in butter. Such herbed butter is not to be confused with **Hempseed butter** (page 12). Here are two ways to make "electric butter," one with a variation:

1. Gently sauté an ounce of herb in 4 oz. (one stick) of dairy butter until butter turns about the same color as the herb used. Strain out and discard plant material. Cool, cover, and refrigerate butter until hard, or use while still melted, in recipes or at the table.

2. a) Cover 6 cups fresh leaves in water and barely simmer for an hour or longer. Add 8 oz. (two sticks) dairy butter; simmer for another hour. Strain leaf fiber out, press, set liquid aside, and return fiber to the pot. Pour more boiling water over the fiber. When it cools press as much liquid from it as possible, adding liquid to that from the first pressing. Repeat. Discard fiber. Refrigerate liquid overnight. Skim the green butter off and refrigerate, covered, until use.

b) Cover 1 oz. fresh leaves and 1 lb. (4 sticks) of butter well with water. Heat just to a simmer. Turn off heat; allow to cool. Repeat three times; chill overnight. Chilled butter is easy to remove from water and spent herb.

Cannabis should not be heated above the boiling point, 212° F. Delta-9-tetrahydrocannabinol (Δ^9 -THC), its main psychoactive ingredient, and other cannabinoids vaporize at 185-190° F. Once extracted into fats they can be cooked at much higher temperatures without vaporizing. Cannabis butter may be substituted for dairy butter in any recipe in this book.

Medical cannabis dispensaries in many cities offer gourmet treats made with specially grown cannabis to qualified buyers. Most "medical edibles" so far tend toward chocolate and sweetness. The **Twice-Baked Idaho POTato** (p. 41) was inspired by this author's too-great indulgence in sugary stuff in San Francisco on a 2005 research trip. I've also included cannabis-containing recipes that don't rely on refined flour or sugar. In some adapted from yesteryear's "underground" marijuana cookbooks, the "electric" ingredient (⚡) is left in; however, you may omit it from any recipe herein with a loss, perhaps, only of appreciation!

Cannabis may also be extracted by soaking in olive or other high-quality seed oil for several days. Use in salad dressings and other cold-oil applications. Early Christians may have used such an extract

to anoint themselves and as a topical medicine. Warm cannabis oil is sometimes used for earache. Heating cannabis in milk also extracts active compounds.

Some medical users and herbalists prefer tinctures, steeping cannabis in 80 proof ethanol alcohol for 48 hours. This is dispensed by the Tablespoonful, diluted.

*Marijuana "tea"*⁹ - an infusion of cannabis flowers in very hot water - is highly regarded by some although THC is water-insoluble. When flowering tops are soaked in water, the resin-bearing glans wash off and are consumed, exerting relaxing, vasodilating effects.

* * *

Among the more insidious developments of the "war on drugs" - really a war on marijuana users - has been the rise of *urinalysis*. Workers, job-seekers, people on probation or parole, recipients of government assistance or benefits, and others regularly provide urine to be tested for THC metabolites. Trace amounts of THC in Hempseed foods, when a slight easing of the drug war gave us a brief taste of them in the 1970s, led the DEA to ban hemp foods for several years, until the courts overruled the ban. *One would have to eat a great deal of Hempseed to obtain a positive for THC on a urine test.* A Canadian laboratory analyzed six varieties of industrial Hempseed in 2000 and found THC levels from 0.40 parts per million ($\mu\text{g/g}$) to 4.66 $\mu\text{g/g}$, averaging 0.54-3.57 $\mu\text{g/g}$.¹⁰ Most was on seed hulls, from contact with flowers and leaves; hulled Hempseed ("hempnut") had even less THC content.

* * *

Where people still rely for medical and recreational cannabis on Mexican imports, seeds make up much of the product, usually discarded by users. Hempseed's nutritional benefits and the chance to use these formerly unwanted nuggets, for which one may pay as much by weight as for "hempnut," may interest these consumers.

⁹ There is only one true tea, *Camellia sinensis*. Other infusions or decoctions made with plant material and hot water are called "tea" for convenience and by popular convention.

¹⁰ Hemp Oil Canada, Inc., Shaun Crew, President. Laboratory Analysis of THC Content in Industrial Hemp Seed. Mar. 10, 2000.

REMEMBER: Marijuana possession (including unsterilized seeds) remains illegal under US law. Cannabis is best used by adults, and must **never** be administered without consent. With those caveats, feel free to add "the Spice of Life" to any recipe in this book!

The Endocannabinoids and Hempseed Nutrition

Long after the drug war began, scientists found that we humans make our own cannabinoids ("endocannabinoids") and have cannabinoid receptors throughout our brains and bodies. This biological communication system, evolved over millennia, regulates brain chemicals affecting mood, sleep, appetite, memory, higher cognition, emotions, blood pressure, bone density, body temperature, fertility, metabolism, and more. Both endo- and exocannabinoids strongly protect nerves, the nervous system, and their operations.

All animals except insects have endocannabinoids and cannabinoid receptors.¹¹ Archaeology, history, language, and folk medicine show that humans have had a beneficial relationship with cannabis ever since our diets had the same proportion of proteins as Hempseed. Today, research is focused on identifying endocannabinoids, their functions, and receptor responses to exocannabinoids such as THC and cannabidiol (CBD, of great medical interest), other compounds in cannabis, and their metabolites.

This may be the first publication to link two fascinating facts:

1. Key endocannabinoids anandamide and 2-arachidonoyl glycerol (2-AG) are made by our bodies, as are other important signaling compounds, from arachidonic acid.¹²
2. Arachidonic acid, found in meat foods, is also made by the body from linoleic acid, found abundantly in hempseed.¹³

In other words, nutrients in hempseed support the endocannabinoid system; while compounds in cannabis flowers can stimulate and regulate this same system.

I believe this topic deserves serious exploration.

¹¹ Lee MA. **Smoke Signals**. Scribner, New York. 2012.

¹² Mechoulam R, Hanuš L. Anandamide and more. **The Pot Book**, *op. cit.*

¹³ Erasmus U. **Fats and Oils**. Alive Books, Burnaby BC, Canada, 1986.