

Yerba Maté FAQ

"Just Like Green Tea, Only Better!"

By Aviva, a Pure Leaf Naturals Company
(updated 9/24/2014)

What is Yerba Maté??

Yerba Maté (*Ilex paraguariensis*) is a small tree native to the subtropical highlands of Brazil, Paraguay, and Argentina. This evergreen member of the Holly family was introduced to colonizing and modern civilizations by the Guarani Indians of these regions. The drink is brewed from the dried leaves and stemlets of this perennial tree. Yerba Maté is known as the national drink of these countries, and is consumed by millions of South Americans as a **healthful alternative to coffee**. This stimulating herbal beverage has the unique ability to wake up the mind without the nervousness and jitters associated with coffee. Deemed "The Drink of the Gods" by many indigenous groups in South America, and known as "the green gold of the Indios" by folks in Europe, yerba maté possesses a multitude of health benefits that have begun to attract the attention of American scientists and consumers.

Isn't Yerba Maté just another "green tea"?

No. Tea is a beverage made from the processed leaves of a plant whose Latin name is *Camellia Sinensis*. There are three varieties of tea: green, black, and oolong. While tea can be grown in a variety of tropical and subtropical environments, the tea plant is indigenous to China, Tibet, and northern India. Most people associate tea with these locations (the Far East and Asia).

Yerba Maté is not derived from the tea plant. It is a completely different drink from a different part of the world. In the United States, South America is more often associated with coffee bean production than anything else. However, consumers outside of South America are beginning to realize there's more to the land than just coffee plantations.

What is the nutritional value associated with Yerba Maté?

The beneficial and therapeutic aspects of yerba maté, portrayed from centuries of observation and use, have recently been verified by a number of scientific studies. The chemical components of yerba maté are similar to those found in green tea; however, as we'll see, yerba maté is much more nutritious.

People worldwide refer to this herbal infusion as a "**whole body tonic**". Tonics are substances provided by nature for the repair and maintenance of normal physiology. According to Webster's Dictionary, tonics "invigorate, restore, refresh, or stimulate [some aspect of one's physical well-being]." Here at Aviva we don't like to use the term "tonic" because it reminds us of those con-artists of the 1800's who would ride from town to town, selling colored water as "tonics" or "potions" that would cure all your ills. In truth, however, yerba maté may be the closest natural beverage to a **whole** body tonic that is on the market today. A combination of observations and research from the scientific community gives strength to that claim....

There are 196 volatile (or active) chemical compounds found in the yerba maté plant. Of those, 144 are also found in green tea. Yerba Maté contains **11 polyphenols**. Polyphenols are a group of phytochemicals. Phytochemicals (*phyto-* meaning plant) contain recently-discovered compounds that act as powerful antioxidants and are considered to exhibit anti-cancer effects in mammals by strengthening an organism's natural defenses and protecting it against cellular destruction (i.e. lycopene in tomatoes, flavonoids in blueberries, and isoflavones in soy). In addition to polyphenols, yerba maté leaves contain **saponins** (In

fact, one study yielded 3 new saponins in the Yerba Maté leaf!) Saponins are phytochemicals that have been found to specifically stimulate the immune system and aid the body in protecting against disease.

Clinical Studies of Antioxidant Properties of Yerba Maté

Yerba Maté has significant antioxidant activity. In a study published in 1995 by *Biochemical and Molecular Biology International*, researchers concluded that water extracts of yerba maté **"were more potent antioxidants than either ascorbic acid (vitamin C) or butylated hydroxytoluene."** A few years later, a group of researchers embarked on a study to again investigate the antioxidant properties of *Ilex paraguariensis* infusions. Those findings were published in March of 2000 in the journal *Biochemical and Biophysical Research Communications*. Their results suggest **"that ingestion of extracts of *Ilex paraguariensis* could contribute to increase the antioxidant defense of an organism against free radicals attack."** In a more recent study, published in the November 2001 issue of *Fitoterapia*, researchers took a look at 7 different plant species in South America. They found that Yerba Maté **"contained a higher content of flavonoids and caffeoyl derivatives than any other assayed species."**

According to a study conducted by a group of researchers at the University of the Republica in Montevideo, Uruguay, yerba maté extracts were found to be **"potent direct quenchers of the free radical 1,1-diphenyl-2-picrylhydrazyl."** They concluded that yerba maté is a **"rich source of polyphenols and has antioxidant properties comparable to those of green tea."** The group published their findings in the June 2003 issue of the *Journal of Alternative Complimentary Medicine*....

Comparison of Total Polyphenol Content (mmol of quercetin equivalents per liter):

Yerba Maté → 6.5 (+/- 0.5)

Green Tea → 1.8 (+/- 0.8)

Black Tea → 1.13 (+/- 0.3)

Comparison of Free Radical Quenching Activities (at dilutions of 1x10⁻¹ v/v):

Yerba Maté → 75% (+/- 5%)

Green Tea → 35% (+/- 5%)

Black Tea → 2% (+/- 5%)

Effects of Mate Tea (*Ilex paraguariensis*) Ingestion on mRNA Expression of Antioxidant Enzymes, Lipid Peroxidation, and Total Antioxidant Status in Healthy Young Women.

The antioxidant activity of mate tea, the roasted product derived from yerba mate (*Ilex paraguariensis*), was observed in vitro and in animal models, but studies in humans are lacking. The aim of this study was to investigate the effects of mate tea supplementation on plasma susceptibility to oxidation and on antioxidant enzyme gene expression in healthy nonsmoking women, after acute or prolonged ingestion. We evaluated plasma total antioxidant status (TAS), the kinetics of diene conjugate generation, and thiobarbituric acid reactive substance (TBARS) contents in plasma, as well as mRNA levels of antioxidant glutathione peroxidase (GPx), superoxide dismutase (SOD), and catalase (CAT). After the supplementation period with mate tea, lipid peroxidation was acutely lowered, an effect that was maintained after prolonged administration. Total antioxidant status and the level of antioxidant enzyme gene expression were also demonstrated after prolonged consumption. **These results suggest that regular consumption of mate tea may increase antioxidant defense of the body by multiple mechanisms.**

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Another human study showed **that phenolic compounds from yerba mate infusion were absorbed and promoted plasma and LDL protection against ex vivo lipid peroxidation.** Additionally, acute consumption of mate infusion had a mild but **significant effect on antioxidant activity** of plasma.

More recently, researchers found daily administration of yerba maté enemas **to reduce oxidative stress** in the colonic mucosa.

Yerba Maté Provides a Wealth of Nutrients

Each infusion of Maté contains:

Vitamins: A, C, E, B1, B2, Niacin (B3), B5, B Complex

Minerals: Calcium, Manganese, Iron, Selenium, Potassium, Magnesium, Phosphorus, Zinc

Additional Compounds: Carotene, Fatty Acids, Chlorophyll, Flavonols, Polyphenols, Inositol, Trace Minerals, Antioxidants, Tannins, Pantothenic Acid and 15 Amino Acids.

According to Dr. Mowrey, Director of the American Phytotherapy Research Lab in Salt Lake City, one group of investigators from the Pasteur Institute and the Paris Scientific Society concluded that yerba maté contains "practically **all of the vitamins necessary to sustain life.**" They focused especially on Pantothenic Acid, remarking that it is "rare to find a plant with so much of this significant and vital nutrient. . . It is indeed difficult to find a plant in any area of the world equal to maté in nutritional value."

In addition, results from a study done by researchers at the University of Madrid assert a high content of mineral elements, especially K, Mg, and Mn, in maté. They considered those findings "to be of great relevance" to the nutritional value of maté infusions.

I take a multi-vitamin with antioxidants, why would the nutrition in Yerba Maté be beneficial to me?

Studies have linked dietary levels of antioxidants, such as vitamins E or C, beta-carotene or lycopene, with a lower risk of cancer and heart disease. However, research has shown little if any risk reduction with pill supplements containing these antioxidants in isolated pure forms. Researchers believe the health benefits of antioxidants, in fact, may be due to their "particular forms in foods, to other substances found in foods, and/or their interactive effects or synergy within the natural plant". In a nutshell, eating whole foods (fruits and vegetables) containing vitamins and antioxidants proves more beneficial than supplementing with pills!

Does Yerba Maté Exhibit Anti-Cancer Properties Like Green Tea?

Aside from its significant antioxidant effects, research from the University of Illinois suggests yerba maté could in fact be a potent ally in cancer protection. The objectives of this study were to determine the phenolic content of yerba maté tea products (MT) (*Ilex paraguariensis*) and evaluate their in vitro capacity to inhibit topoisomerase I (Topo I) and II (Topo II) activities and oral carcinoma cell proliferation. Their work is published in the *Journal of Agricultural and Food Science* 2005 (vol 53) pgs. 1966-1973. As a direct comparison, they found that human antitopoisomerase II activity was significant and showed a 65% inhibition compared with 15% for green tea.

As shown earlier in this paper, yerba maté infusions generally exhibit a higher antioxidant activity than green and black teas. This is also evident from the lab results of our own Aviva brand of yerba maté. The research group at the university found yerba maté to be extremely "**rich in phenolic constituents**".

"Flavonoids are phenolic compounds widely distributed in plants, and their consumption has been associated with the prevention of age-related chronic conditions including cancer and cardiovascular diseases. Furthermore, tea flavonoids have antitopoisomerase activity and can inhibit cell proliferation." As the article goes on to state, "data from in vitro and in vivo

studies suggest a potential beneficial effect of tea polyphenols against cancer at most stages of development."

The group concluded through its series of tests that **yerba maté "can inhibit oral cancer cell proliferation."** One particular finding of interest suggests maté extract could be potentially "exploited for its cytotoxicity against malignant oral carcinoma cells while causing little damage to normal or premalignant cells in the cancerous lesion."

What's interesting to note is that the group did not find a connection between polyphenol levels and anti-cancer activity. "The polyphenolic content of the different MT did not correlate with the degree of topoisomerase inhibition. This finding suggests that the inhibition of topoisomerase and oral carcinoma cell proliferation may probably be due to the presence of other unidentified phytochemicals in MT. **The fact that MT also inhibits oral cancer cell proliferation makes this botanical product a potential source of still unknown active substances that can be added to the arsenal of compounds that could be used in cancer prevention and treatment.** Therefore, MT deserves further studies..."

Does yerba maté contain EGCG like green tea? – Although maté does not contain catechins, that is, EGCG, it does have compounds that act similarly, such as 3,5-dicaffeoylquinic acid. This compound has shown to be a potent proteasome inhibitor comparable to EGCG, which has known proteasome inhibition activity and is being investigated for cancer treatment.

What Kind of Health Benefits Can I Expect to See from Drinking Yerba Maté?

There are many positive effects of maté drinking that have been observed by consumers, and further confirmed in scientific studies. The positive effects listed below have been directly or indirectly attributed to drinking yerba maté infusions.

Research on the effects of Ilex paraguariensis in health and disease has confirmed its antioxidant, anti-inflammatory, antimutagenic and lipid-lowering activities.... the evidence seems to provide support for beneficial effects of mate drinking on chronic diseases with inflammatory component and lipid metabolism disorders. -Borges MC, Vinolo MA, et al

Yerba Maté:

Induces Mental Clarity-Some people claim that cigarette smoking helps them think more clearly and be more creative. For the most part, they are correct. Nicotine, in moderation, has been shown to have positive effects on cognitive function. However, tobacco and tobacco smoke contain a multitude of other harmful chemicals. Why not get the same effect WITHOUT having to smoke?!! Yerba Maté has the ability to quicken the mind and increase mental alertness and acuity. Furthermore, it contains no nicotine and is not addictive or habit-forming!

In fact, a recently filed US Patent (2002) cites yerba maté for **inhibiting monoamine oxidase (MAO) activity by 40-50% in vitro**. The underlying study suggests that maté might be useful for treating a variety of disorders such as. . . "depression, disorders of attention and focus, mood and emotional disorders, Parkinson's disease, extrapyramidal disorders, hypertension, substance abuse, eating disorders, withdrawal syndromes, and the cessation of smoking."

Sustains Energy Levels/Reduce Fatigue-Yerba Maté is a central nervous system stimulant. The metabolic effects of maté appear to include the ability to maintain aerobic breakdown of carbohydrates during exercise for long periods of time. As a result, more

calories are burned, thereby increasing cardiac efficiency and delaying the build-up of lactic acid.

Boosts the Immune System-The yerba maté plant contains a number of powerful known saponins, and probably a few yet to be discovered!

Helps Relieve Allergies-Linda Rector Page, N.D., Ph.D., notes that yerba maté is helpful in opening respiratory passages to overcome allergy symptoms. Shown to reduce the severity of some allergies and hay fever, yerba maté works by stimulating the adrenal glands to produce corticosteroids, which help suppress the inflammation and immune response due to allergies.

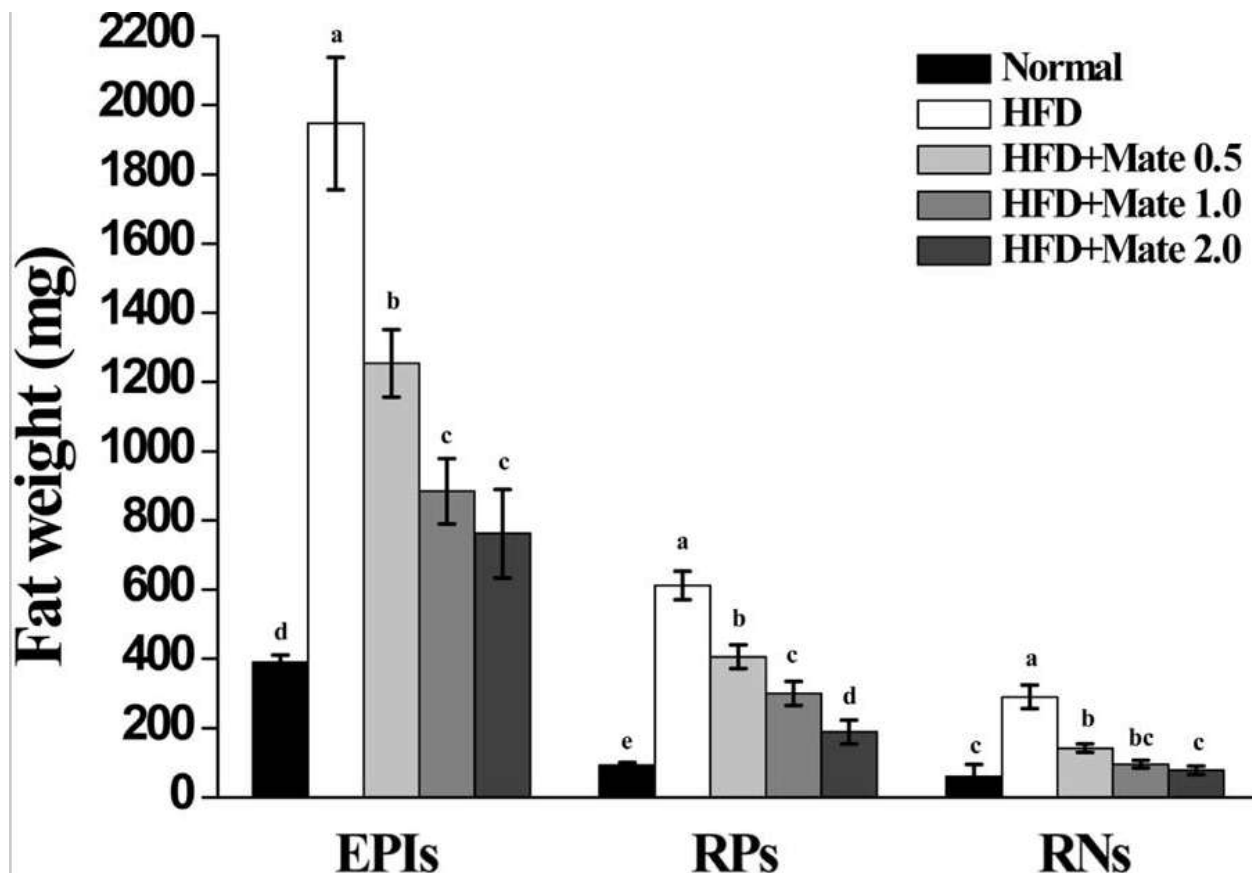
Aids in Weight Loss / Weight Management-For many years now, physicians in Europe have been incorporating yerba maté in treatments for obesity.

In 1999, researchers at a Swiss University studied various commercially-available plant preparations that have claimed to possess anti-obesity action. No significant increase in energy expenditure (EE) was noted after treatment with any of the preparations. In addition, no change in respiratory quotient (RQ) was shown, except after treatment with maté (*Ilex paraguariensis*) extract, where a drop in RQ was observed, indicating a **rise in the proportion of fat oxidized**. The results suggested the poor potential of these plant preparations in the treatment of obesity, except possibly for the maté extract.

In 2000, a research team studying obesity at the Charlottenlund Medical Center in Denmark tested an herbal preparation of Yerba Maté, Guarana, and Damiana (YGD) for gastric emptying and subsequent weight loss. They concluded that the herbal preparation, YGD capsules, significantly delayed gastric emptying, reduced the time to perceived gastric fullness **and induced significant weight loss** over 45 days in overweight patients treated in a primary health care context. In addition, maintenance treatment given in an uncontrolled context resulted in no further weight loss, nor weight regain in the group as a whole.

More recently, a team at the University of Sao Paulo found the consumption of yerba maté "promoted weight loss, attenuated the HFD-detrimental effects on adiposity and insulin sensitivity and decreased blood levels of the inflammatory biomarkers." They concluded that yerba maté reduced cardiometabolic risk markers.

In 2012, a study was conducted to evaluate the effects of yerba maté extract on weight loss, obesity-related biochemical parameters, and diabetes in high-fat diet-fed mice. To this end, by using in vivo animal models of dietary-induced obesity, we have made the interesting observations that yerba maté has the ability to decrease the differentiation of pre-adipocytes and to reduce the accumulation of lipids in adipocytes, both of which contribute to a lower growth rate of adipose tissue, lower body weight gain, and obesity. Our data from in vivo studies revealed that yerba maté treatment affects food intake, resulting in higher energy expenditure, likely as a result of higher basal metabolism in yerba maté-treated mice. Furthermore, in vivo effects of yerba maté on lipid metabolism included reductions in serum cholesterol, serum triglycerides, and glucose concentrations in mice that were fed a high fat diet. In conclusion, **yerba maté can potentially be used to treat obesity and diabetes**.



HFD=High Fat Diet; EPI: Epididymal, RP: Retroperitoneal fat, RN: Peri-renal fat

Improves Digestion-The Indians of South America traditionally use yerba maté to treat gastrointestinal disorders as eupeptic and choleric agent. Research conducted by a team at Catedra de Farmacologia in Buenos Aires, Argentina found that yerba maté does in fact induce an increase in bile flow and **enhance intestinal transit**.

Diabetic Treatment-Yerba maté has been shown to inhibit the formation of advanced glycation end products (AGEs), with an effect comparable to that of two pharmaceutical grade AGE inhibitor drugs. The formation of AGEs plays a part in the development of diabetic complications.

A second study conducted by researchers in 2005 at Touro University in California further supported the notion that yerba mate has the potential to address diabetic complications due to hyperglycemia. The aim of the present study was to address the hypothesis that polyphenol-rich *Ilex paraguariensis* (IP) extracts are capable of inhibiting advanced glycation end-products (AGEs) formation and to compare the potency of these extracts with green tea and with the standard antiglycation agent aminoguanidine.

The group found IP polyphenols to be about 2- to 2.5-fold higher in their preparations compared with green tea (supports the higher polyphenol content that we mentioned earlier in this FAQ). Their results demonstrate a significant, dose-dependent effect of water extracts of *I. paraguariensis* on AGE adducts formation on a protein model in vitro, whereas green tea displayed no significant effect. The inhibition of AGE formation was comparable to that obtained by using millimolar concentrations of the standard antiglycation agent aminoguanidine.

Inhibits Lipid Peroxidation-A study conducted by Gugliucci and published in *Biochemical Molecular Biology International* (1995) claims low-density lipoprotein (LDL, or "bad cholesterol") oxidation is **inhibited by extracts of yerba maté**. Oxidation of LDL is

considered to be the initiating factor to the onset of atherosclerosis (thickening and hardening of the arteries).

A second study conducted in 2006 by a group of researchers at the Federal University of Santa Catarina (Brazil) looked at atherosclerosis and oxidative stress. It has been shown that *Ilex paraguariensis* extract is a strong antioxidant *in vitro* which may prevent the development of atherosclerosis. However, the antiatherogenic effect of *Ilex paraguariensis* extract has not been shown *in vivo*. In this study, they evaluated this hypothesis on experimental atherosclerosis in rabbits. In summary, the results of this work showed that *Ilex paraguariensis* aqueous extract **effectively inhibited the progression of atherosclerosis in cholesterol-fed-rabbits.**

Fights Bad Breath-Polyphenols found in tea and yerba maté have been shown to prevent both the growth of bacteria responsible for bad breath and the bacteria's production of odorous compounds.

AntiParkinson Activity-A 2007 study examined the antiparkinsonian activity of the hydroalcohol extract of *Ilex paraguariensis* in models of protection against cerebral injury induced by MPTP and reversal of the catatonia induced by reserpine in mice. The results obtained suggest that the **hydroalcohol extract of *Ilex paraguariensis* may have an antiparkinsonian profile in animal models**, probably through its antioxidant activity and antagonist action on adenosine A(2A) receptors.

Oral Cavity Defense-Free radicals are involved in diverse disorders such as tumoral, central nervous system alterations, immunological and inflammatory pathologies.

Peroxidase is an oral enzyme involved in the defense of the oral cavity. In this study, the activity of aqueous extracts of *I. paraguariensis* and "Yerba Mate" on peroxidase secretion in female rat submandibular glands was investigated. The contribution to this pharmacological activity by some major hydrocinnamic acid derivatives present in the crude extracts, such as chlorogenic acid and caffeic acid and the most abundant methylxanthine, caffeine, was also evaluated. Spectrophotometrical determination of peroxidase activity showed that **both extracts produced a significant increase in both secreted peroxidase and total peroxidase activity, though "Yerba Mate" showed a higher activity.**

Are there any side-effects associated with Yerba Maté?

"Ok guys, so far you've talked about all the wonderful health benefits that can be attributed to Maté drinking, but are there any known negative effects?"

Like many things in life, too much of a good thing can sometimes be harmful. For example, too much exposure to the sun can cause skin cancer (yet, ironically, too little sun has also been shown to potentiate certain cancers), too much vitamin A can cause headache/blurred vision/joint pain, too much iron can be toxic to the liver, too much fluoride from green/black teas can be toxic and damage the immune & certain enzymatic systems, too much milk (vitamin D) can cause nausea and calcium deposits on internal organs, too much vitamin C can cause diarrhea/kidney stones/blood disorders, too much Niacin (vitamin B₃) can cause ulcers or liver disorders, too much calcium can cause constipation/urinary tract stones, too much charred meat on the grill can increase the risk of cancer. . . .and the list goes on.

Moderation is important to remember when it comes to many of life's activities, especially in regard to diet and nutrition.

In North America, studies have suggested a link between **coffee consumption and cancer** in humans, especially pancreatic cancer. A study published in the prestigious New England Journal of Medicine (1981) found evidence of a "strong association between coffee consumption and pancreatic cancer in both sexes." More recently (2002), German

researchers are looking into the possibility that something in coffee could increase our risk for cancer. German scientists tested 24 brands of coffee and seven brands of espresso. They found small amounts of acrylamide... a substance that international experts have classified as a "probable human carcinogen". Acrylamide is likely formed when coffee beans are roasted. These are but two of a handful of studies suggesting a coffee-cancer link. On the other hand, there are a number of studies that fail to derive a correlation between coffee consumption and an increased risk of cancer. In spite of these negative reports, the demand for coffee products continues to increase in the United States and a new Starbucks opens every week.

Let's take a look at tea (*Camellia Sinensis*). **Tea is second, only to water, in worldwide consumption.** Today, tea is considered a healthful beverage and a powerful antioxidant/anti-cancer agent. Numerous clinical studies have highlighted the health benefits of incorporating tea into one's diet. Ironically, the earliest studies on tea and cancer hinted at the possibility that **tea might actually cause cancer.** Initial evidence showed that some populations drinking large quantities of tea had higher rates of esophageal cancer. Upon careful examination, it was found that the high rates of this particular cancer were due to the temperature at which the tea was consumed rather than the tea itself. For example, in some parts of northern China it is customary to drink very hot tea, and this was associated with a 2- to 3-fold increase in risk for esophageal cancer. In the U.S., U.K., Australia and many other countries, it is customary to drink either iced tea or tea with lemon or milk, and thus its temperature is lower.

- **"Green tea drinking, high tea temperature and esophageal cancer in high- and low-risk areas of Jiangsu Province, China: a population-based case-control study."** Epidemiological studies suggested drinking green tea is inversely associated with esophageal cancer but results remain inconclusive. Moreover, inconsistent observations found high temperature drinks are associated with esophageal cancer. A population-based case-control study was conducted in a high-risk area (Dafeng) and a low-risk area (Ganyu) of esophageal cancer in Jiangsu province China from 2003 to 2007. It aimed to explore green tea drinking and tea temperature with the risk of esophageal cancer, and to compare the difference between different risk regions.

In conclusion, green tea drinking was not inversely associated with esophageal cancer in this study. However, drinking tea at high temperatures significantly increased esophageal cancer risk.

- **"Tea drinking habits and oesophageal cancer in a high risk area in northern Iran: population based case-control study."** OBJECTIVE: To investigate the association between tea drinking habits in Golestan province, northern Iran, and risk of oesophageal squamous cell carcinoma. PARTICIPANTS: 300 histologically proved cases of oesophageal squamous cell carcinoma and 571 matched neighbourhood controls in the case-control study and 48 582 participants in the cohort study. MAIN OUTCOME MEASURE: Odds ratio of oesophageal squamous cell carcinoma associated with drinking hot tea. RESULTS: Nearly all (98%) of the cohort participants drank black tea regularly, with a mean volume consumed of over one litre a day. the researchers calculated that people who said they drank "hot" tea (149 to 156 degrees Fahrenheit) were more than twice as likely to develop esophageal cancer as people who said they drank the beverage "warm" or "lukewarm" (less than 140 degrees). Those who said they took their tea "very hot" (at least 158 degrees) were more than eight times as likely to get esophageal cancer.

CONCLUSION: Drinking hot tea, a habit common in Golestan province, was strongly associated with a higher risk of oesophageal cancer.

Footnote: *Temperature of Coffee- brewed is 195°F for a commercial brewer and probably 175°F for home brewers. Lattes are 145°F to 155°F.*

Yerba maté has a very similar chemical make-up to the tea plant. As you have read, it's packed with lots of good things for those who drink it. But, is there anything about consuming yerba that could result in negative effects? **Researchers have not identified any native substance in the yerba plant that is considered harmful to humans when consumed in moderation.** However, there have been some "epidemiological" studies (periodically mentioned by journalists in the media; though they rarely tell the whole story) that have suggested a link between mate consumption and an increased *risk* of certain cancers. Here's potential explanations (from scientists) to the observations (incidence, distribution of disease) found in these populations (which is what "epidemiological" means; nothing *in-vitro* or *in-vivo*, but rather general observations in populations):

- 1.) South Americans traditionally consume yerba maté through a metal straw called a bombilla. This practice can result in repeated scalding to the back of the throat and esophagus if very hot water is used. Burning yourself (obviously) is something that should be avoided as the greater body of research from the medical community suggests a general connection between the rapid consumption of hot foods and beverages and an increased risk for long-term tissue damage. Refer to the previous section regarding studies with drinking hot tea.
- 2.) Additionally, there's a tendency for folks in South America (especially Uruguay) to consume large amounts of yerba (10-13 kilograms a year!). This over indulgence is similar to some consumers' coffee habits here in the states. Refer to #1 and #3 as to why this may lead to a problem.
- 3.) Traditional processing of yerba maté involves drying the harvest over open or semi-open fires. This causes the maté to be exposed to various levels of smoke and the same chemicals that result when you smoke meats or char grill foods (or even roast coffee beans). Some of these substances, known as Polycyclic Aromatic Hydrocarbons (PAHs), are believed to be carcinogenic. Unfortunately, we as residents on this planet can't escape PAHs. They're a bi-product of our industrialized society. They're in the food we eat and the air we breathe (leafy veggies such as spinach absorb these compounds more so than others). According to its Wikipedia entry, "*PAHs are one of the most widespread organic pollutants. In addition to their presence in fossil fuels, they are also formed by incomplete combustion of carbon-containing fuels such as wood, coal, diesel, fat, tobacco, or incense.*"

Footnote: *In recent years, alternative methods of production have been implemented by your favorite brands in the maté industry, which reduces or even eliminates herb exposure to smoke and fire (e.g. hot air drying and flash blanching with water)*

Moral to these stories: **1) Consume food and drink in moderation. 2) If a beverage is scalding hot and could possibly burn you, don't drink it yet! Let it cool. 3) If you see a scary headline in the news (on any product), be sure to investigate further and make sure things are put in perspective.**

Yerba maté, like coffee and tea, is considered safe by the FDA and is on their GRAS (Generally Recognized as Safe) list. Consumed in moderation, **maté is recognized as one of the most healthful natural beverages on earth!** Suggested daily consumption is 2-3 cups of a 3-4g infusion.

Can I Consume Maté During Pregnancy?

While we strongly suggest that you consult with your doctor in regard to diet and nutrition during pregnancy, we do want to present a recent study concerning yerba maté

consumption by pregnant individuals. The following is an abstract of an article published in the *Journal of Nutrition* about a study conducted by a group at a university in Brazil...

"To assess the effect of mate drinking during pregnancy on preterm and small for gestational age (SGA) birth, a cross-sectional study was done. From January 1st to December 31st, 1993, in the first 24 h after delivery, all 5304 mothers giving birth at the hospitals in Pelotas, Southern Brazil, were interviewed and several of their characteristics were gathered. Birthweight was recorded and gestational age at birth assessed using the Dubowitz score. All 5189 single births were analyzed. The prevalence of SGA and preterm birth was 8.0 and 9.1%, respectively. Mate intake at least once a week during the entire pregnancy period was reported by approximately 68% of the mothers. Crude analyses showed a 30% increase in the risk of SGA among daily mate drinkers compared with nonconsumers (prevalence ratio = 1.3; 95% CI 1.1-1.6), whereas no statistical association was detected with preterm births. After controlling for confounders, the significance of the association with SGA birth no longer held and the lack of association with prematurity remained unchanged. **In conclusion, prevalence of daily mate drinking was high among pregnant women and, contrary to the hypothesis, no harmful effect on intrauterine growth or duration of pregnancy was detected.**"

Does Yerba Maté Contain Caffeine?

No!...Yes!...Maybe. Confused? In the early 90's when maté first started making inroads into North America, a handful of herbalists came forward and claimed that the stimulant found in maté was not caffeine but a newly discovered chemical they named *matéine*. This new xanthine supposedly possessed all the positive attributes of caffeine, but none of the negatives. Unfortunately, these studies cannot not be verified, nor the research corroborated. However, *many* scientific studies since then have identified, verified, documented, and validated the fact that **caffeine, theobromine, and theophylline** are the primary active xanthine alkaloids in the maté leaf.

What is Caffeine?

Caffeine is a stimulant that has been shown to possess the ability to **enhance athletic and cognitive performance**, even after sleep deprivation and stress.

According to Dr. Judith Reichman. . .

"There's no question that caffeine is a powerful psychoactive drug. We use it as a mental stimulant (and today the act of drinking coffee in coffee shops has become a social stimulant for conversation, business meetings, and logging onto the Web). Caffeine prevents sleepiness and sharpens thinking by blocking the action of certain neurotransmitters and lifts moods by affecting dopamine. It "revs you up" by promoting release of adrenaline, starting at doses lower than fifty milligrams, which is about the amount in a serving of black tea or cola. It has been shown to improve muscle coordination and strength if consumed just prior to exercise or an athletic event. **It also increases energy expenditure, and to a very small extent helps us burn calories.** Because it helps relax the airways of the lungs, caffeine is associated with fewer asthma attacks in asthmatics. And here's an effect we've all noticed: it can act as a laxative. In fact, many women rely on their morning coffee to keep them on schedule from both a gastrointestinal and daily activity perspective. Two to three cups a day may lower the incidence of Parkinson's disease (according to Nurses' Health Study data) and seems to decrease gallstone formation, at least in men."

Caffeine Content of Popular Beverages

Plant	Caffeine Content	Avg. Caffeine in 8oz drink
Yerba Maté Leaves	0.6 – 2%	25 – 100 mg
Aviva Yerba Maté	~ 1%	~33 mg
Coffee Beans	1 – 2.5%	100 – 225 mg
Black Tea	2.5 – 4.5%	10 – 60 mg
Guarana Seed	4 – 8%	200 – 400 mg
Cola	0.75 – 2.5%	40 mg (12oz can)
Chocolate	0.25%	13 mg (1.5oz bar)

All of these xanthines also have diuretic properties and other documented pharmacological actions that include: CNS stimulation, relaxation of smooth muscle (especially bronchial muscle), myocardial stimulation, and peripheral vasoconstriction.

What is intriguing about yerba maté is that its stimulating effects are dissimilar to other caffeine-containing beverages such as coffee, colas, or teas. Even individuals sensitive to caffeine report a more balanced energized feeling...

“Over the past year, I have been giving the Yerba Maté tea to my patients who need to stop using caffeine-containing products for health reasons. I have had good feedback on the results. I like having a healthful substitute for coffee, tea and colas to offer them.” K.L.P., M.D.

Nutritionists suggest that people avoid consuming alcohol or caffeinated beverages before bedtime because they may disrupt normal sleep patterns. However, Dr. Mowrey’s article states that...

“One of the remarkable aspects of maté is that it does not interfere with sleep cycles; in fact, it has a tendency to balance the cycles, inducing more REM sleep when necessary, or increasing the amount of time spent in delta states. Many people report that they require less sleep when using maté; usually such an experience is accompanied by a deeper, more relaxing sleep.”

So. . . .does *Ilex paraguariensis* contain caffeine? Yes. Scientific evidence suggests that it does. However, the synergy among the caffeine and maté’s chemical constituents seems to result in a very different physical effect on consumers. As with the introduction of coffee and tea to North American consumers, hopefully the increasing interest in yerba maté will influence the scientific community to continue its research into this healthful South American favorite!

Where can I purchase Yerba Maté?

Yerba Maté can be purchased by visiting our secure online store at:

<http://www.yerba-mate.com/storefront.htm>

We sell loose maté as well as maté in tea bags (*Wild Harvest ~ Pure Leaf!*). If you currently drink green or black tea, **you’ve got to try yerba maté**. As with tea, certain brands of maté can have somewhat of a bold “earthy” taste. On the other hand, some maté can exhibit a bland taste with little or no character. A general rule of thumb is that maté grown and harvested in its natural forest environment will typically have a bolder, more natural taste than maté grown on a sprawling farm underneath the scorching sun. Aviva yerba maté tends to fall in the middle, probably leaning to the bold side of the spectrum. **It goes down smoothly, with a hint of boldness!** If the taste of your maté is not favorable, we suggest experimenting by adding honey, sugar, cocoa, milk, or various herbs. For your convenience, we sell mixed maté blends with spearmint, lemon myrtle, mint, or chai. We also have a line of summer blends developed specifically with the iced tea lover in mind.

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<http://www.yerba-mate.com>

These are outstanding! In addition, we have a variety of accessories (gourds and bombillas) for consuming maté in a traditional fashion!

Best of Health!!

Your Friends at Aviva!

"A South American Favorite With a North American Twist!"

*These statements have not been evaluated by the FDA. This product is not intended to diagnose, treat, cure, or prevent any disease. Statements made in this paper are not intended to be medical advice.

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