

News from Pine Island Organics

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Welcome to Issue 3 of the Pine Island Organics Newsletter

We have been working on a few new products, planning our Fall - Winter market schedule, and continuing to improve our website. In this Issue you will find more information than you will ever need about Matcha (with a bit of current research), an introduction to two new spice blends, and a delicious easy-to-make recipe.



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*Introducing Pine Island Organics Two New South American
Spice Blends and our Matcha Tea Powder*



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Everything You Should Know About Matcha and More

1. What is Matcha?

Matcha (抹茶) is finely ground powder of specially grown and processed green tea leaves. It is special in two aspects of farming and processing: the green tea plants for matcha are shade-grown for three to four weeks before harvest, and the stems and veins are removed during processing. During shaded growth, the plant *Camellia sinensis* produces more theanine and caffeine. It is then de-veined, de-stemmed, and stone-ground to the fine, bright green, talc-like powder known as matcha. This powdered form of matcha is consumed differently from tea leaves or tea bags.

The traditional Japanese tea ceremony centers on the preparation, serving, and drinking of matcha as hot tea and embodies a meditative spiritual style. In modern times, matcha has also come to be used to flavor and dye foods such as mochi and soba noodles, green tea ice cream, matcha lattes, and a variety of pastries.

Matcha can be categorized into three grades (although there is no standard industry definition or requirements):

Ceremonial grade: *This is the highest quality used mainly in tea ceremonies and Buddhist temples. This is stone-ground into a powder by granite stone mills. It is high-quality and expensive. The unschooled drinker is unlikely to notice a large difference between Ceremonial and Premium grade. Ceremonial is characterized by subtle tones of "umami".*

Premium grade: *High-quality matcha green tea that contains the full nutritional content and uses tea leaves from the top of the tea plant. Best for daily consumption and contains the full range of antioxidants, vitamins and minerals. Is characterized by a fresh, subtle flavor. Usually perfect for both new and everyday matcha drinkers alike.*

Cooking/culinary grade: *Least expensive and suitable for cooking purposes. Slightly bitter due to using leaves lower down on the green tea plant.*

2. Does Matcha offer health benefits?

Because matcha is made from very high-quality tea, and the whole leaves are ingested, it's purported to be a more potent source of nutrients than steeped green tea. In addition to providing small amounts of vitamins and minerals, matcha is rich in antioxidants called polyphenols, which have been tied to protection against heart disease and cancer, as well as better blood sugar regulation, blood pressure reduction, and anti-aging. Another polyphenol in matcha called EGCG (*epigallocatechin-3-gallate*) has been shown in research to boost metabolism, and slow or halt the growth of cancer cells.

Caffeine is more concentrated in matcha, which Japanese Zen monks have utilized to stimulate awakesness, but the main matcha constituent expected to have a stress-reducing effect is theanine. Theanine is the most abundant non-protein amino acid in green tea and is what gives matcha its umami flavor. The preparation of matcha requires the tea leaves to be protected from sunlight, resulting in reduced biosynthesis of theanine into catechin and a higher concentration of theanine than in traditional green tea brewing.

A study featured in the American Journal of Clinical Nutrition found that consuming matcha green tea can increase thermogenesis (the body's own rate of burning calories) from a normal 8%-10% of daily energy expenditure, to between 35% and 43% of daily energy expenditure.

Theanine's stress-reducing effects were tested at Japan's University of Shizuoka, School of Pharmaceutical Sciences, where studies show that lab mice which consumed more than 33 mg/kg of matcha had significantly suppressed adrenal hypertrophy, a symptom that shows sensitivity to stress.

Matcha Nutritional Content per 2 gram serving (approximate)	
Calories	5
Total Fat	0g
Sodium	0mg
Carbohydrates	1g
Net carbs	0g
Sugar	0g
Fiber	1g
Protein	1g
Total Micronutrients	
Vitamin A IU	582 IU
Vitamin C	3.5mg
Potassium	53mg
Calcium	0mg
Iron	0.4mg
Total Catechins	210mg
EGCG	122mg
Total Amino Acids	68mg
L-theanine	28.5mg
Caffeine	50-70mg

Using the testing method known as ORAC (oxygen radical absorbance capacity), experts at Tufts University discovered that matcha possesses an amazing twenty times more so than that of pomegranates or blueberries. Matcha's ORAC rating is a mighty 1573 units per gram, compared to pomegranates 105 units per gram, blueberries 93 units or broccolis' 31.

3. Does consuming Matcha have a downside?

Matcha does contain caffeine:

Beverage serving	Average Caffeine Content
Green Tea (6 to 8oz)	24 to 40 mg
Black Tea (6 to 8oz)	14 to 61 mg
Matcha (4 to 6oz)	60 to 70 mg
Brewed Coffee (6 to 8oz)	85 to 200 mg

Lead and other heavy metal (Aluminum, Arsenic, Cadmium, Nickel) content is a concern:

Even organically grown green teas have been shown to contain lead, which is naturally absorbed by the plant from the environment - particularly tea grown in China. When traditional green tea is steeped, about 90% of the lead stays in the leaf, which is discarded. With matcha, since the whole leaf is consumed, you will ingest more lead. One independent group, ConsumerLab.com, which tested teas, estimates that a cup of matcha may contain as much as 30 times more lead than a cup of green tea. Therefore, they recommend drinking no more than one cup daily. Matcha and green tea in general from Japan has been shown to contain much smaller amounts of heavy metals compared to tea from China, India, Korea, and Nepal.

Although matcha (and green tea) contains thousands of health-promoting compounds, including epigallocatechin gallate (EGCG) and L-theanine, non-organic (and GMO) tea may additionally contain a number different pesticides (many of them illegal), naturally accumulated fluorides, additives, and fillers.

4. Is Matcha better than green tea?

Some believe that the only way to truly take advantage of green teas full potential is to consume the entire leaf. But that doesn't mean you need to start eating tea leaves. The simplest solution is to just enjoy a bowl of matcha. Because matcha is straight, stoneground tea leaves, matcha provides you with green teas powerful arsenal of vitamins, minerals, antioxidants, and amino acids in a way no other green tea can. So, don't throw away valuable antioxidants and minerals - that's exactly what happens when you brew a cup of green tea because water can only extract a fraction of green teas benefits. The majority actually remains unused, trapped in the tea leaves.

5. How is matcha prepared?

Traditional method of preparation:

Requires specialized equipment: Matcha Bowl, Bamboo Whisk, Bamboo Spoon

Daily serving size: 4 oz tea

- *Warm the Matcha bowl by adding hot water. After a minute, discard water and dry bowl thoroughly
- *Rinse bamboo whisk to keep tea powder from sticking
- *Using a traditional bamboo spoon, add 1.5-1.75 spoons of powder (1 level regular teaspoon - about 2 grams) per 4 oz serving
- *Add approximately 4 ounces of hot water (175-180 deg F), Do not use boiling water
- *Mix briskly with bamboo whisk until all lumps are removed and tea is smooth and creamy with a fine foam on top

**In a traditional setting, prior to use, the matcha often is forced through a sieve in order to break up clumps. There are special sieves available for this purpose, which usually are stainless steel and combine a fine wire mesh sieve and a temporary storage container. A special wooden spatula is used to force the tea through the sieve, or a small, smooth stone may be placed on top of the sieve and the device shaken gently.*

Contemporary method of preparation:

No specialized equipment required.

Daily serving size: 6 oz tea.

- Use 1 level tsp. (about 2 grams) of Matcha per 6 oz of water.
- *Pour hot water (175-180 deg. F) over tea. Do not use boiling water
- *Steep 2-4 minutes
- *Stir and serve immediately (straining is optional)

Pine Island Organics' Matcha is a stone-ground blend of Organic Fair-Trade Ceremonial and Premium grade Japanese Matcha powder. It has a bit more robust flavor than 100 percent Ceremonial grade Matcha, is slightly less sweet, with slightly more bitter notes. Our matcha is packed with all the antioxidants and healthful compounds, and is perfect for that traditional cup of tea and yet affordable enough (\$15.00 for 2oz) to use as an ingredient in both sweet and savory dishes.

Nutrients. 2019 Jun; 11(6): 1361.

PMCID: PMC6627400, PMID: 31212946

Mechanisms Underlying the Anti-Depressive Effects of Regular Tea Consumption

Dylan O'Neill Rothenberg and Lingyun Zhang^{*}

Abstract

This article is a comprehensive review of the literature pertaining to the antidepressant effects and mechanisms of regular tea consumption. Meta-data supplemented with recent observational studies were first analyzed to assess the association between tea consumption and depression risk. The literature reported risk ratios (RR) were 0.69 with 95% confidence intervals of 0.62–0.77. Next, we thoroughly reviewed human trials, mouse models, and in vitro experiments to determine the predominant mechanisms underlying the observed linear relationship between tea consumption and reduced risk of depression. Current theories on the neurobiology of depression were utilized to map tea-mediated mechanisms of antidepressant activity onto an integrated framework of depression pathology. The major nodes within the network framework of depression included hypothalamic-pituitary-adrenal (HPA) axis hyperactivity, inflammation, weakened monoaminergic systems, reduced neurogenesis/neuroplasticity, and poor microbiome diversity affecting the gut–brain axis. We detailed how each node has subsystems within them, including signaling pathways, specific target proteins, or transporters that interface with compounds in tea, mediating their antidepressant effects. A major pathway was found to be the ERK/CREB/BDNF signaling pathway, up-regulated by a number of compounds in tea including teasaponin, L-theanine, EGCG and combinations of tea catechins and their metabolites. Black tea theaflavins and EGCG are potent anti-inflammatory agents via down-regulation of NF-κB signaling. Multiple compounds in tea are effective modulators of dopaminergic activity and the gut–brain axis. Taken together, our findings show that constituents found in all major tea types, predominantly L-theanine, polyphenols and polyphenol metabolites, are capable of functioning through multiple pathways simultaneously to collectively reduce the risk of depression.

Keywords: *Camellia sinensis*, depression, inflammation, HPA axis, gut–brain axis, neurogenesis, neurotransmission, SCFA, EGCG, theaflavin, L-theanine

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6627400/>

Heliyon. 2019 May; 5(5): e01653.

PMCID: PMC6512570, PMID: 31111111

Stress-reducing effect of cookies containing matcha green tea: essential ratio among theanine, arginine, caffeine and epigallocatechin gallate

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Abstract

The stress-reducing effect of matcha, a high-quality fine-powdered green tea, has recently been clarified by animal experiments and clinical trials. However, the effect of matcha added to confectioneries is not clear. One aim of this study was to evaluate the relationship between matcha components and their stress-reducing effect in mice that were loaded with territorially-based stress. Adrenal hypertrophy, a marker of stress, was significantly suppressed in stress-loaded mice that had ingested matcha components, displaying a caffeine and epigallocatechin gallate to theanine and arginine (CE/TA) ratio of 2 or less. Another aim was to evaluate, in humans, the stress-reducing effect of matcha in cookies using test-matcha (CE/TA = 1.79) or placebo-matcha (CE/TA = 10.64). Participants, who were fifth year pharmacy college students, consumed 4.5 g of matcha in three pieces of cookie daily for 15 days. Salivary α -amylase activity, a stress marker, was significantly lower in the test-matcha group than in the placebo group. These results indicate that the CE/TA ratio of tea components is a key indicator for the suppression of stress. Moreover, matcha with a CE/TA ratio of 2 or less displays a stress-reducing effect, even if it is included in confectionery products. Such products may also benefit individuals who have no habit of drinking matcha as a beverage.

Keywords: Physiology, Food science

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6512570/>

Aging (Albany NY). 2018 Aug; 10(8): 1867–1883.

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Matcha green tea (MGT) inhibits the propagation of cancer stem cells (CSCs), by targeting mitochondrial metabolism, glycolysis and multiple cell signalling pathways

Gloria Bonuccelli,¹ Federica Sotgia,¹ and Michael P. Lisanti¹

Abstract

Matcha green tea (MGT) is a natural product that is currently used as a dietary supplement and may have significant anti-cancer properties. However, the molecular mechanism(s) underpinning its potential health benefits remain largely unknown. Here, we used MCF7 cells (an ER(+) human breast cancer cell line) as a model system, to systematically dissect the effects of MGT at the cellular level, via i) metabolic phenotyping and ii) unbiased proteomics analysis. Our results indicate that MGT is indeed sufficient to inhibit the propagation of breast cancer stem cells (CSCs), with an IC-50 of ~0.2 mg/ml, in tissue culture. Interestingly, metabolic phenotyping revealed that treatment with MGT is sufficient to suppress both oxidative mitochondrial metabolism (OXPHOS) and glycolytic flux, shifting cancer cells towards a more quiescent metabolic state. Unbiased label-free proteomics analysis identified the specific mitochondrial proteins and glycolytic enzymes that were down-regulated by MGT treatment. Moreover, to discover the underlying signalling pathways involved in this metabolic shift, we subjected our proteomics data sets to bio-informatics interrogation via Ingenuity Pathway Analysis (IPA) software. Our results indicate that MGT strongly affected mTOR signalling, specifically down-regulating many components of the 40S ribosome. This raises the intriguing possibility that MGT can be used as inhibitor of mTOR, instead of chemical compounds, such as rapamycin. In addition, other key pathways were affected, including the anti-oxidant response, cell cycle regulation, as well as interleukin signalling. Our results are consistent with the idea that MGT may have significant therapeutic potential, by mediating the metabolic reprogramming of cancer cells.

Keywords: Matcha green tea, cancer stem-like cells (CSCs), proteomics analysis, metabolism, mitochondrial OXPHOS, glycolysis

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6128439/>

Salmorejo - Brazilian Chilled Tomato Soup



Tempero Baiano is one of the most popular spice blends found in kitchens throughout Brazil. Originating in the Indigenous & African-influenced province of Bahia, this spice blend has bold, earthy and exotic flavors that add zest to seafood, meats, vegetables, stews and many traditional Brazilian recipes. The adjacent recipe demonstrates just one Spanish -Brazilian dish you can easily make at home to enjoy the delicious, rich flavors of South America.

Pine Island Organics Tempero Baiano blend includes: Organic; marjoram, Mexican oregano, white pepper, black pepper, nutmeg, basil, red pepper flakes, parsley, and bay leaf.

Ingredients:

- 8-10 ripe plum tomatoes, quartered
- 2 cups crusty Italian bread, torn or cubed
- 1/4 cup extra virgin olive oil
- 2 cloves garlic, minced
- 1 Tablespoon **PIO Tempero Baiano** seasoning
- 1/4 teaspoon sherry vinegar or red wine vinegar
- 1/4 teaspoon **PIO Mediterranean Sea Salt**
- 2 hard-boiled eggs, chopped
- 2 oz thinly sliced Serrano or Prosciutto ham (or cucumber, scallion, and bell pepper)
- **PIO Red Pepper Flakes** (optional)

Instructions:

1. In a large bowl, combine tomatoes, bread, garlic, **PIO Tempero Baiano**, vinegar and salt.
2. Mix to combine. If the tomatoes aren't very juicy, add a Tablespoon or two of water to moisten the bread.
3. Let the mixture sit in the refrigerator about 30 minutes.
4. Add the tomato mixture to a blender and start the blender on a low speed to puree.
5. Slowly add the olive oil while the blender is running.
6. Puree until soup is smooth and has a creamy consistency; add a little more water if needed.
7. Chill the soup for at least 1 hour before serving.
8. Ladle into soup bowls and top with eggs, ham, or vegetables, and **PIO Red Pepper Flakes**.
9. Serve cold.

Notes:

Salmorejo is a purée consisting of tomato and bread, originating from Cordoba in Andalucia, south Spain. It is made from tomatoes, bread, oil and garlic. Normally, the tomatoes are skinned and then puréed with the other ingredients. The purée is served cold and may be garnished with diced Spanish serrano ham and diced hard-boiled eggs.

Salmorejo is similar to Gazpacho yet more pink-orange in appearance, and is also much thicker and creamier in texture, because it includes more bread. It is served as a starter or first meal and must obviously be chilled before eating. There are several variations in Andalusia, including *ardoria* and *porra antequerana* (with bits of tuna as topping), and also versions with finely sliced fresh onion and green pepper.

Less known abroad than Gazpacho, Salmorejo is found in any house in Andalucia, restaurant, and tapas bars. In the tapas bars it is used as a sauce for preparing montadidos, tiny sandwiches filled with various ingredients, the most typical being jamon serrano.

Our version integrates a somewhat traditional Andalusian Salmorejo recipe with the exotic flavors of Brazil. - Buen provecho and bom appetite!



Pine Island Organics' Upcoming Markets



8 am - 1 pm TUESDAY August 6th 13th & 20th
Surfside Sunshine Market
 236 Surfside Boulevard, Fort Myers, Florida

8 am - 1 pm SATURDAY August 10th, 17th & 24th
Cape Coral Farmers Market at Cape Harbour
 5785 Cape Harbour Drive, Cape Coral, FL

9 am - 2 pm SUNDAY August 25th
Pine Island's Farm to Art Market
 Island Conclave Fine Art Gallery
 5101 Pine Island Road, Bokeelia, Florida

8 am - 1 pm TUESDAY September 10th, 17th & 24th
Surfside Sunshine Market
 236 Surfside Boulevard, Fort Myers, Florida

8 am - 1 pm SATURDAY September 14th, 21st & 28th
Cape Coral Farmers Market at Cape Harbour
 5785 Cape Harbour Drive, Cape Coral, FL



Located in St. James City, on Pine Island in the heart of SW Florida's Gulf Coast, Pine Island Organics creates natural, botanically based self-care products in service to our customers, our community, and our planet.

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Photo by Karen McCrea

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