

## **Coffee, the good, the bad, and caffeine.**

Perhaps this is the place to state a scientific fact:

**Coffee is considered more of a medicine than food, i.e. a drug.**

I have stated the incredible health benefits of coffee in the posted paper. There are also serious health risks.

Let's first address caffeine.

- 1- Caffeine, like coffee at large, is also a friend and a foe. It has its medicinal benefit and it has its harm.
- 2- If we remove the caffeine out of coffee, the coffee benefits cited in the posted document remain relatively the same. i.e. it is not the caffeine itself. Decaffeinating coffee beans is NOT the answer to the negative side effects of coffee.
- 3- Most of the negative research on coffee is linked to its impact on the nervous system. Coffee is a stimulant. It increases the release of stress hormones, which are normally reserved for life or death, fight or flight situations. A fact worth mentioning here is, the release of the same hormones occurs with decaffeinated coffee.

We talked about **coffee, a friend.**

There are about 1000 active constituents in the coffee bean. Coffee beans, the seed of the fruit, is loaded with antioxidants.

- The most powerful antioxidant in the coffee bean is chlorogenic acid, a compound that is most concentrated in the green, unroasted coffee bean. The weakening of this compound in the coffee bean's roasting process explains why we need such high amounts of coffee to reap the benefits of coffee. But that's only one single "good" property. See the attached paper for documented research and medical reports on the benefits of coffee.
- One cup of coffee a day, will reduce your risk of diabetes by 13%
- Twelve cups a day, will reduce the risk of diabetes by 67%.
- Six cups of coffee a day had an 18% reduction on prostate cancer and a 40% reduction of aggressive lethal cancer.
- Four cups of coffee a day could reduce your risk of liver cirrhosis by 84%.
- Five cups a day for five weeks began to reverse Alzheimer's damage in the brain by reducing levels of amyloid-beta, both in the blood and the brain.
- One to four cups reduced the risk of Parkinson's by 47% and five cups a day reduced it by 60%. In this study, the greater number of cups of coffee per day, the lower the risk of Parkinson's disease.
- Women who drank 1-3 cups of coffee a day had a 24% lower risk of dying from cardiovascular disease.

**These are incredibly valuable health benefits that cannot be ignored. No wonder coffee beans are classified medically as a medicine. So, what is the problem?**

### **First off, sometimes bigger is not better:**

Coffee boosts dopamine and drives degenerative hormones like cortisol, epinephrine (adrenaline), and norepinephrine, and inhibits calming GABA. These changes may be helpful in an emergency state or illness, but are not advised as a long term treatment of our nervous system.

### **Now, coffee, the foe:**

DHEA (dehydroepiandrosterone) is a steroid hormone that decreases with the consumption of coffee. DHEA is responsible for cellular and tissue repair. It also enhances the cognitive function, several physiological functions, and protects against stress.

Coffee consumption (including decaffeinated coffee) releases dopamine, an addictive neurotransmitter known as the pleasure hormone. When the brain is overwhelmed with dopamine, it associates that pleasure with the source of the dopamine dose. After the coffee rush wears off, the brain starts thinking about its next cup, so that when a coffee drinker drives by a coffee shop, they may be compelled to stop even if they were not previously thinking about coffee. This is the effect of addiction hormone dopamine on the brain.

Dopamine may only be one mechanism for the addictive nature of coffee. Withdrawal symptoms such as painful headaches, nausea, depression, anxiety, and fatigue are common when a coffee drinker tries to stop.

### **In addition, coffee:**

- Increases risk of kidney stones.
- Raises homocysteine levels – a major risk factor for heart disease.
- Raises blood pressure.
- Is linked to erectile dysfunction.
- Raises cholesterol.
- Increases gastric reflux and heartburn.
- Increases inflammation.
- Damages the nervous system.
- Interferes with neurotransmitters in the brain.
- Alters DNA repair.
- Lowers bone density.
- Interferes with sleep.

Most of coffee's negative data stem from the damaging effects of the increased production of degenerative stress hormones. Because these effects seem to be true for both caffeinated and decaffeinated coffee, it is obvious that **coffee's stimulating elements are not limited to caffeine.** Using coffee as a stimulant to get energy is an unnatural process that creates an imbalance, an adrenal exhaustion.

## What about caffeine?

A reasonable amount of caffeine is good for you. It positively contributes to improvement in these areas:

- brain circuitry involving the activities of correct choice,
- calming symptoms associated with Parkinson's disease as it counters lack of the neurotransmitter dopamine, by blocking adenosine, a dopamine inhibitor.

As stated, the benefits of coffee, and its negative side effects, are the same in both natural coffee and decaffeinated coffee (with the obvious exception of the caffeine element, and in fact the exception of the weakening or suspension of some good properties of coffee via the decaffeinating process.)

Caffeine is not the source or the reason behind coffee's medicinal benefits or its unrelated negative side effects.

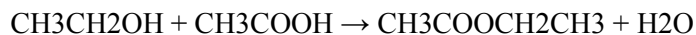
## Decaffeination:

Caffeine reduction utilized a few common methods:

- Water process decaffeination by soaking the beans in very hot water and the caffeine as well as flavors and other constituents are naturally extracted into solution. The caffeine, being a larger molecule, is filtered out and the rest of the filtrate is re-introduced to the beans by a drying process. This a natural, organic, safe approach.
- Supercritical Carbon Dioxide Extraction Method, which is also an organic approach. It is a solvent-free extraction method that allows carbon dioxide (CO<sub>2</sub>) in a supercritical state (between a liquid and a gas) to selectively extract caffeine from a coffee bean. The beans are soaked in water and then, under very high pressure, CO<sub>2</sub> is added, acting like a magnet, it pulls only the caffeine out of the saturated bean. The CO<sub>2</sub> does not influence the aromatic and flavorful proteins and carbohydrates.
- Ethyl Acetate Method. This solvent is found in smaller quantity in many fruits, and is even found in coffee beans. The beans are steamed for 30 minutes and then steamed in water and Ethyl Acetate for about 10 hours, where the caffeine is extracted. The mixture is drained and the process repeated several times to complete the extraction process.

*Chemical Formula: CH<sub>3</sub>CH<sub>2</sub>OC(O)CH<sub>3</sub> Synonyms: ethyl ester, ethyl acetate, acetic ester, ester of ethanol, Ethyl acetic ester, acetoxyethane, vinegar naphtha, acetidin, Aceticester*

To provide a sample of semi-technical presentation, this method treats green beans with a natural agent present in herbs and fruits, namely ethyl acetate. (The industry commonly uses trichloroethylene or methylene chloride to produce commercial decaffeinated beans.) The organic compound Ethyl acetate, systematically, ethyl ethanoate, CH<sub>3</sub>COOCH<sub>2</sub>CH<sub>3</sub> is very volatile, evaporating at 77 C and as such can be removed from the beans easily. The principle is based on the fact that Ethyl acetate is synthesized via the reaction of ethanol and acetic acid. This mixture converts to the ester in about 65% yield at room temperature:



It can also be prepared by combining two equivalents of acetaldehyde in the presence of an alkoxide catalyst:



A natural blend of fruit extracts, mainly bananas and berries, would be the base of the chemical manipulation. This method can be costly, and in fact, it will produce the same result as the water-soaking, carbon filter, column extraction process, which is commercially and economically sound.

Caffeine itself, “the compound C<sub>8</sub>H<sub>10</sub>N<sub>4</sub>O<sub>2</sub>” is not responsible for the flavour of coffee, however, as we see in the illustration to the right, that even a very small quantity in the solution (coffee drink) can be utilized to play a positive role in helpful chemical manipulations. Keep in mind that total caffeine removal is not obtained via the method Optimum Green sought.

In fact, nor do we think it's necessary. Significant caffeine reduction can even be achieved via the use of a blend of normal and decaf beans at a desired ratio as I'll explain later.

- Methylene Chloride Method (i.e. Dichloromethane-DCM): Though it is not within the definition of a “natural” process, it is the most common procedure as it is deemed to produce the best tasting decaffeinated coffee. The beans are boiled in water extracting the flavors and caffeine. The water extract is separated from the beans and mixed with methylene chloride solution where the caffeine is extracted. Then the beans and caffeine-free water are re-united, whereupon the beans reabsorb their flavor.

Note: Decaf coffee is even more acidic than the already acidic coffee bean. This makes decaf more of a risk to drink on an empty stomach, as it can increase the possibility of excess stomach acid and irritation. Drink water before and after having decaf coffee.

**So, what is the answer?**

**How to get the good,  
avoid the bad,  
and have the right caffeine?**

**This is what Gouda Coffee & Café Canadian are all about.**

Our approach is simple, logical and effective:

- **The insertion of more of the good properties of coffee, imported separately from natural herbs.**  
The concept is to significantly increase the quantity of the good properties in coffee, so that one single cup of coffee would still have only the negative side effects of one cup – at this level is negligible, but, would have the good properties of several cups of coffee.
- The use of dark beans only. Contrary to common belief, the darker the bean, the less caffeine. We could roast the beans longer, manipulating the temperature setting, then, ground it rather fine for the purpose of flavour interaction with the herbal addition.
- The partial use of quality, organic, naturally decaffeinated beans, processed via such methods as the Swiss approach. i.e. we would use a blend of two types of beans, for example, a ratio of 30% or 40% naturally decaffeinated organic beans, and 70% or 60% organic, regular, dark beans.

Hence, the heart of Gouda coffee & Café Canadiana is the supplementary blend addition, not the beans – as long as they are quality beans.

**Our recommendation for a secondary caffeine-reduced recipe is:**

- 25% quality organic decaffeinated beans.
- 75% quality organic dark beans
- The addition of the Gouda formula of natural health supplementary blend.

And, it must be reemphasized that Gouda Coffee and Café Canadian's approach is focused on the enrichments with health supplements of natural herbs and spices in a specific ratio, and by reducing the number of coffee cups consumed, the product provides:

- Higher level of health benefits positive properties.
- Lower quantity of the harmful properties.
- Lower caffeine quantity.

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