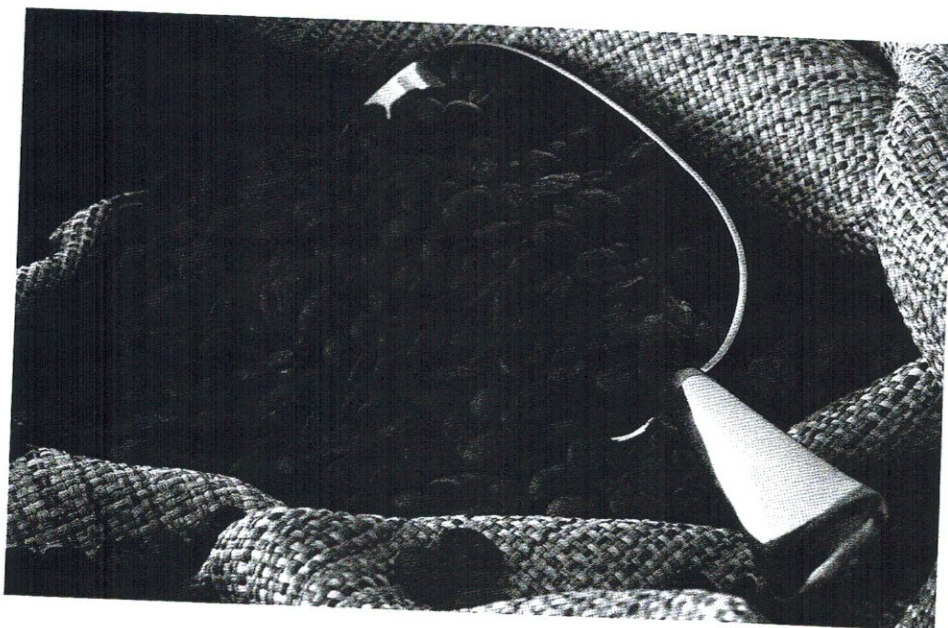


COFFEE...

the Effects are as GOOD as the Aroma



Overview:

The smell of brewed coffee, no matter what time of day, is one of the most pleasurable experiences for our senses. In fact, studies have shown that the two most comforting aromas during cold weather are chocolate baking and coffee brewing. Every morning many of us drink coffee with no real thought about what the beans bring to the brew. These little bundles of taste are extraordinarily complex, containing over 1,000 compounds, only a handful of which have been individually investigated by scientists. Coffee is not only packed with a beneficial group of compounds called polyphenolic antioxidants and caffeine (unless decaffeinated), it is also the single greatest sources of antioxidant in the American diet.

The average American coffee drinker consumes just over three cups per day, but extensive research has found that higher volumes (as much as four to 12 cups daily) can help prevent or lessen the effects of many major ailments such as cardiovascular disease, cancer, diabetes, Parkinson's, and Alzheimer's disease.

In a controlled study, compared to non-coffee drinkers, women who drank the

most coffee cut their risks of breast cancer by up to 57 percent and type 2 diabetes up to 67 percent. But the potential downside is that when several cups of coffee are consumed daily, unpleasant effects can occur such as coronary palpitations, psychic hyperactivity with shaking from excess caffeine, on-and-off gastrointestinal difficulties, and/or sleep disturbances.

Lab tests show that not all coffee products provide the same powerful protection against chronic disease. The important polyphenol antioxidant content varies with how long the beans are roasted and the roasting method itself. Unfortunately, all roasting destroys some amount of the polyphenols, the most important of which is chlorogenic acid. For those unable to tolerate coffee or simply don't enjoy it, pure chlorogenic acid and "green coffee beans" are now available and increasing in popularity as consumers learn of their benefits.

In a new patented roasting process, coffee beans are first soaked in water and then drained prior to being heat-roasted. Once roasted, the beans are deposited back into the same water in which they were originally pre-soaked and are, thus, able to absorb back much of the previously extracted

polyphenols. This process simply bypasses the direct exposure of polyphenols to destruction of roasting.

A comparison of chlorogenic acid (CGA) content with the new and old roasting methods shows the outcome of brewing. Since more chlorogenic acid is presented in the new brewing process, less cups of potent "distress" need be consumed:

Conventional Decaffeinated Coffee:	52mg CA/cup
Conventional Coffee Roasting:	92mg CA/cup
Polyphenol-Retaining Decaf Coffee:	132mg CA/cup
Polyphenol-Retaining Process:	172mg CA/cup

* 254% more chlorogenic acid ** 186% more chlorogenic acid
Source: US Patent Publication #US2010/0183790 A1 (July 22, 2011)

How the Ingredients in Coffee Affect the Body's Physiology

Despite coffee's powerful antioxidant punch, the mechanism for coffee's protection against a host of diseases involves more than a fierce battle between antioxidants and free radicals. Scientists are revealing the facts of coffee's phytochemistry and how this exerts direct biological action on the body which may underpin a web of indirect, protective effects against many diseases.

Early studies suggested the polyphenols in coffees (caffeinated and decaffeinated) could modify key enzymes to improve intracellular signaling by which vital cells could be "instructed" to enhance tissue repair, immunity, and preserve homeostasis. In 2008 and 2009, studies began to show poor cell signaling as looking more like the troublemaker causing platelet aggregation and clots, cancer, diabetes, neuro-degenerative diseases, and overall aging. This in-depth analysis brought about new revelations showing that by modulating specific cell-signaling pathways, known as ERK1/2 and JNK, the various polyphenols in coffee, especially chlorogenic acid, help prevent the degeneration of specific human cells rich in lipids (mainly brain tissue). This information, however, provides only a short leap to the conclusion explaining coffee's neuroprotective effects against cognitive decline and many neurodegenerative diseases such as Parkinson's disease, Lou Gehrig's (ALS), Multiple System Atrophy, and a whole host of related central nervous system maladies.

A study in 2011 suggests that polyphenols from coffee can affect cellular responses and sensitivity by interacting with nuclear receptors. These internal cellular segments pick up intracellular signals which determine whether a cell receives the correct "instructions" to divide, die, or release molecules to regulate various body functions to fight disease.

Coffee compounds also act to raise levels of detoxifying enzymes, protecting against DNA damage. One advantage to this is the likelihood of reducing the susceptibility of lymphocytes (white blood cells) to damage from reactive oxygen species. This, in turn, helps protect DNA from oxidative damage.

Looking into other mechanisms of helpful activity, a 2009 study showed an additional benefit. When subjects consumed three cups of coffee daily for three weeks, they experienced an increase in the number and metabolic activity of beneficial gastrointestinal bifidobacteria. These bacteria can act in a host of good ways to boost immunity, lower blood pressure, and increase mineral absorption. Coffee's phenolic compounds have also shown with consumption of four to eight cups daily that they possess a direct action on dampening inflammatory activity throughout the body. This is key to reducing chronic low-level inflammation and its causation to aging and the breakdown of vital physiologic pathways leading to several debilitating diseases.

We also see that consumption of coffee, both caffeinated and decaffeinated, shows specific improvements in the function of the liver and adipocytes, both of which are essential to a healthy metabolism and especially important in controlling the tendency to diabetes.

In addition, a 2011 study confirmed that caffeine is a potent scavenger of oxygenated free radicals and can work synergistically with other coffee antioxidants to function in a manner unrelated to its antioxidant action. It appears that caffeine protects the integrity of the blood-brain-barrier. This suggests that it may reduce the risk of some diseases by limiting the transport of blood-borne pathogens, drugs, cells, and other substances into the brain chamber where they can adversely affect the functioning of brain synapses. The study also showed that caffeine defends against the specific blood-brain-barrier dysfunction linked to Alzheimer's and Parkinson's diseases.

COFFEE CONSUMPTION Associated with the Reduction in Death from All Causes

Researchers at the National Institutes of Health, in conjunction with the American Association of Retired People, explored coffee drinking and its impact on all-cause mortality. Allowances and exclusions were made for those entering the study already suffering from serious illnesses and deleterious habits like excess alcohol

consumption and/or smoking. Hundreds of thousands of men and women were sniffled for 13 years to give a sample of over five million person-years with very strong statistical significance. After accounting for the negative variables, data showed there was a remarkably strong association between coffee consumption and survival. To put it simply, the more coffee the subjects drank, the less likely they were to die. Further analytical breakdown of the study showed that to a greater extent, specific maladies were prevented by coffee drinking including heart and lung disease, stroke, type 2 diabetes, and various infections. Interestingly, researchers even saw a lowered risk of dying from injuries and accidents. Because this protective effect was evident whether subjects drank caffeinated or decaffeinated brews, it begs the question, "What else in the coffee bean presents life-saving effects?"

Coffee Cups/Day	% LOWER RISK OF DYING	
	Women:	Men:
> 1	No Reduction	No Reduction
1	5%	6%
2 - 3	13%	10%
4 - 5	16%	12%
< 6*	15%	10%

* Reduced benefit was exhibited where the maximum threshold of positive result was exceeded.
Source: New England Journal of Medicine, 2012 May;366(20) 1891-904.

As previously mentioned, natural coffee beans contain more than 1,000 different compounds that could affect health and risk of death. Of these compounds, the polyphenols are the best candidates for several reasons. As a group, they are powerful antioxidants and can modulate gene expression which translates into how much and how often a particular gene is "switched on." This allows the gene to directly influence many of the cell's most basic processes including signals that control when a cell dies, replicates, responds to other chemical signals, and overall stimulation. When we suffer impaired cellular signaling for any reason, functionality with bad intentions usually arise with a dangerous prognosis in the offing.

The "alpha" chemical, both in presence and activity, of the polyphenols is chlorogenic acid. Chlorogenic acid provides its overall benefits by driving down the chronic inflammation that is the hallmark of many diseases of aging including Type 2 diabetes and atherosclerosis. The acid acts preferably within cells with high fat content (such as those in the brain), helping to explain observations that coffee sustains cognition with aging. Also affected are the fat cells of the liver and the overall impact of obesity. Protecting DNA from all sorts of potential damage is the likely mechanism by which coffee consumption may lower the risk for many cancers.

Diabetes Management

It has been ascertained by scientists and confirmed by the International Diabetes Federation that diabetes has exploded in numbers to over 366 million worldwide. Regular coffee consumption, with its beneficial ingredient chlorogenic acid, lowers the risk of developing type 2 diabetes by up to 67%. The acid's activity seems to stem from its ability to reduce levels of blood glucose formation by directly interfering with its synthesis and release in the body. The pathway of this inhibition is from blocked activity of the major ubiquitous glucose-regulating enzyme, glucose-6-phosphatase, which results in a pronounced reduction of sugar levels in the blood. One extensive study showed that imbibing one cup of coffee per day protects against developing type 2 diabetes by 13%; consuming four cups per day can protect up to 47%, and if the consumer can handle the gastrointestinal potential for distress and the likelihood of excess neurological stimulation, drinking 12 cups daily affords protection against type 2 diabetes by up to 67%. Another large study of over half a million people showed that each additional cup of coffee added protection against Type 2 diabetes by another 7%.

Chlorogenic acid also lessens the hyperglycemic peak (blood sugar elevation) associated with carbohydrate ingestion which results in a downturn in insulin activity and a reduced accumulation of adipose tissue. Lessening the after-meal glucose surge and aiding its return to a normal level is very important in protecting against potential negative cardiovascular risks in diabetics and others with heart disease. Various compounds in coffee, including caffeine, are now being tested to see if they boost the diabetic-preventive effect of chlorogenic acid. Early lab results are showing that these chemicals are able to lower carbohydrate storage by as much as 35% while improving insulin's activity.

Dedicated coffee consumption has been shown to inhibit iron absorption and storage, and in 2004, scientists found a direct link between reduced iron storage in the body and a lower risk of Type-2 diabetes independent of other risk factors.

The Consumption of Coffee to Protect Against Cardiovascular Disease

As the leading cause of death in our country, cardiovascular disease kills over one-third more Americans than cancer. Deaths from cardiovascular disease overall, and in particular from coronary heart disease and stroke, have been shown to be significantly reduced by coffee consumption. The positive effects of chlorogenic acid (and other coffee components) are evident from several recent large studies.

A 2011 study showed there is no correlation between long-term coffee consumption and increased blood pressure or cardiovascular disease. Although a strong dose of coffee can briefly raise blood pressure, daily consumption actually decreases blood pressure readings after just a few weeks due mainly to the chlorogenic acid. A 15-year study of over 41,000 women found that the risk of death from cardiovascular disease was 24% lower among those consuming 1-3 cups of coffee daily.

At the cellular level, the tendency to cardiovascular disease can be lessened by consuming just one cup of coffee daily due to its ability to inhibit platelet aggregation within one hour, regardless of caffeine content.

For years, coffee was thought to increase the risk of high blood pressure and cardiovascular disease, mainly due to the effects of caffeine. But like everything else related to coffee consumption, these misconceptions have changed drastically in recent years due to intense investigative studies. The stigma of coffee drinking has also included the association of consuming enough coffee to try and overcome the toxic effects of too much alcohol, the one-two punch of coffee and cigarettes, or the attempt at overcoming sleep deprivation with continuous caffeine ingestion.

But the main "secret ingredient" of a positive nature is the chemical now showing remarkable positive activity in the body: chlorogenic acid. This compound, which can be enhanced in concentration with new protocols, acts to lessen the potential for endothelial (the inner lining of arteries) inflammation, keeping it smooth and decreasing the chance for circulating fats in the blood to adhere. Studies have also found that regular coffee consumption improves the formation of high-density lipo-proteins and increases the availability of artery-expanding nitric oxide, protecting against increase in blood pressure from caffeine.

Coffee Consumption's Beneficial Effects on Brain Function

Coffee consumption has also been documented to positively affect cognitive function during the aging process. In several studies, an average of three cups of coffee consumed per day showed an astounding 4.3 times lesser level of decline in cognitive function compared with non-consumers of coffee. Enriching coffee with polyphenols, especially chlorogenic acid, produces still greater benefits, even more so than green (not yet roasted) coffee beans. This was demonstrated in a study which showed an increased brain cell survival rate by 78% in the face of severe oxidant stress. And with enriched roasted coffee from enhanced beans, brain cell survival increased by as much as 203%. Even decaffeinated coffee from enhanced chlorogenic acid beans improved mood and attention to a greater extent than that found with with regularly-processed decaffeinated coffee.

These benefits are likely to be of special importance in the face of the growing epidemic of Alzheimer's disease and other neuro-degenerative conditions. It has been recently estimated that more than 40% of people over 84 will be stricken by Alzheimer's disease; however, moderate consumption of coffee (three to five cups per day) has been tied to reduced cognitive difficulty of all kinds in the aged.

Recent animal studies with mice have shown that caffeinated coffee consumption (the equivalent of five or more cups per day in a human) not only protects the brain's primary neuronal cells against damage of Alzheimer's disease, but can even reverse some of the damage in as little as five weeks.

Caffeine alone has been shown to reduce the levels of the protein enzymes beta- and gamma-secretase, substances used to build the main damaging protein, amyloidbeta (A-beta), found in Alzheimer's disease. The proteins that go into the manufacture of A-beta are reduced to such low levels in the blood and brain that they provide protection, and even begin to reverse some of the disease's damage. Further research is showing that there is a synergistic beneficial effect from as yet unknown chemicals in coffee that augment caffeine's ability to increase blood levels of a factor known as granulocyte colony-stimulating factor (GCSE) which further acts to improve cognitive function in Alzheimer's patients.

Cardiovascular Risk-Reduction from Coffee Consumption in Diabetic Adults at Increased Risk for All Causes of Death

Cups/Day	Total	Cardiovascular	Heart Disease	Stroke
0-2	No Reduction	No Reduction	No Reduction	No Reduction
3-4	23%	21%	22%	23%
5-6	32%	30%	30%	36%
7+	30%	29%	37%	10%

SOME SURPRISING HEALTH BENEFITS OF COFFEE

- ALZHEIMER'S**
A recent study has found that people who drink 3-5 cups of coffee a day were 65% less likely to develop Alzheimer's. Coffee may also reduce production of proteins that deposit in the brains of those with Alzheimer's.
- STROKE**
A 2009 study has shown that women who drink 4 cups of coffee a day had a 20% lower chance of having a stroke.
- HEART DISEASE**
The antioxidants in coffee have several beneficial effects for the heart including the improvement of blood vessel function and the reduction of inflammation. A study has also shown that women who drink 2-3 cups a day have a 25% lower risk of death from heart disease.
- DIABETES**
Drinking coffee can lower the risk of type II diabetes by up to 80%, due to the antioxidants and minerals in caffeine improving glucose metabolism and insulin sensitivity.
- LIVER CIRRHOSIS**
Drinking just 2 cups of coffee a day can lower the risk of Liver Cirrhosis by 80%.
- PARKINSON'S**
A 2007 study found that those who drink at least 3 cups of coffee a day reduced their cancer at developing Parkinson's disease by almost 60%.
- GOUT**
Men who drank up to 4-5 cups of coffee a day were 40% less likely to develop gout.
- CANCER**
Women who drink 3 cups a day have half the risk of developing colon cancer. A recent Japanese study found that those with a lower risk of endometrial cancer.
- MEMORY**
Older people who regularly drink coffee recorded a slower rate of cognitive decline.
- GALLSTONES**
It has been shown that women who drank 4 cups of coffee a day were 25% less likely to need surgery for gallstones, while drinking coffee has been linked to a lowered gallstone risk in men.