Recent/Ongoing Dark Cacao Studies

Recent discoveries in Honduras showed traces of cocoa on cups and plates dating back to 2000 B.C. Between 200 and 900 A.D., the Mayan culture celebrated cocoa as a central part of their agriculture, economy, medicine and religion.

Still used today, the word “cacao” is derived from ancient Olmec and subsequent Mayan languages (“kakaw”), while the term “cacahuatl,” also related to the root origin of cacao, is from ancient Aztec.

UC Davis Studies Deanna pucciarelli

Deanna Pucciarelli and Louis Grivetti from the University of California, Davis recently published a paper titled, “The Medicinal Use of Chocolate in Early North America.” This paper discussed the long history of medicinal chocolate in North America dating back to the 16th century (2). The paper suggested that medicinal chocolate was very prominent in many of the remedies prescribed for an assortment of illnesses, referring to advertisements of the day, including the following: “Always on hand pure cocoa and Homeopathic Chocolate, without any admixture of spices, are to be had, by the single cake or by the box of 25 pounds each.”

Northumbria University - England

Professor David Kennedy is the director of Brain, Performance and Nutrition Research Center at Northumbria University in England. He recently led a group of researchers in exploring the effects of cocoa on the human brain ability to perform mathematical equations. Professor Kennedy, co-author of the study, concluded from the study that consuming chocolate could benefit people when performing mentally challenging tasks.

“For things that are difficult to do, mentally demanding things that maybe crop up in your work, [consuming cocoa] could help,” Professor Kennedy said.

The researchers gave a flavanol-rich hot cocoa drink to 30 individuals, and then had them answer various mathematical questions. The cocoa used in the study contained 500 milligrams of flavanols—more than would normally be found in fruits and vegetables. Dark chocolate, as one of the three major sources of flavanols discussed above, contains higher quantities of flavanols than the highly processed chocolate we see in the candy aisle of the grocery store. Flavanols, as previously discussed, are part of a group of chemicals called polyphenols. They increase the level of cerebral blood flow, among many other health benefits.

After consuming the cocoa drink, the volunteers in this study were asked to count backwards in groups of three, beginning with a random number between 800 and 999 (generated by computer). The study showed that the subjects’ mathematical performance was clearly affected by the drink, and suggests that students who binge on chocolate while studying for exams may actually benefit from doing so—at least in terms of mental acuity. Subjects accomplished the calculations more quickly and more accurately than the control group.
The findings were presented at the British Psychological Society annual conference at Brighton, and also showed that subjects were inclined to feel less tired and less mentally drained after answering the questions.

In the interest of full disclosure, the study also found that the same test subjects did struggle with more complex mathematical tasks.

Professor Kennedy stated, “The amount [of flavanols given in the study] is more

than in the [normal] diet, but there is quite a lot of evidence that general amounts are protective against declining function. The more [foods you eat that are] high in polyphenols, the better it is for your brain in the long run."
Conclusion: High levels of flavanols found in chocolate can improve mental acuity when taken in the proper amounts.

Unversity of Utah Isoprostane

One of the easiest molecules to check in urine is isoprostane—a molecule that damages the body. If antioxidants are absorbed and functioning correctly, there should be a reduced level of isoprostane found in urine. High levels of isoprostane are associated with increased risk for dementia.

The study performed in 2008 by the University of Utah showed statistically significant increases of ORAC levels in blood plasma, increases of glutathione levels in plasma, and decreases in isoprostane levels found in urine. University of Utah researchers found these results using both a standard dose of Xocai Active™ (one ounce, three times per day), as well as an increased dose (three ounces, three times per day). These findings confirmed other reports of increased serum ORAC levels, increased glutathione levels, and decreased isoprostane levels found in other "in-vivo" tests (tests performed in the human body) with dark cocoa powder.
Conclusion: Cocoa, specifically Xocai Activ™, contributes to decreased isoprostane levels in the body, proving the absorption of cocoa antioxidants.

Journal of Agriculture and food chemistry report

While wine, particularly red wine, is touted as a cardio-protective substance (a good source of antioxidant anthocyanins), a recent study found that blueberries deliver 38% more of these free radical fighters than red wine. In this study, published in the August 2003 issue of the Journal of Agriculture and Food Chemistry, researchers found that a moderate drink (about 4 ounces) of white wine contained .47 mmol of free radical absorbing antioxidants. Red wine provided 2.04 mmol, and a wine made from high-bush blueberries delivered 2.42 mmol of these protective plant compounds. (October 1, 2003)

Pterostilbene, (pronounced TARE-oh-STILL-bean), a powerful antioxidant compound found in blueberries—already known to fight cancer—may also help lower cholesterol. In a study using rat liver cells, scientists at the USDA Agricultural Research Service compared the cholesterol-lowering effects of pterostilbene to those of ciprofibrate (a lipid-lowering drug) and to those of resveratrol. Resveratrol is an antioxidant found in grapes that has a chemical structure similar to pterostilbene, and has been shown to help fight cancer and heart disease.

The USDA based their comparison on each compound's capacity to activate PPAR-alpha (short for peroxisome proliferator-activated receptor alpha). The PPARs are a family of receptors on cells all throughout the body that are involved in the absorption of compounds into cells for use in energy production. PPAR-alpha is crucial for the metabolism of lipids, including cholesterol. Pterostilbene was as effective as ciprofibrate and outperformed resveratrol in activating PPAR-alpha (January 14, 2005). The take-away message: Turn up your cholesterol burning machinery by eating more blueberries, grapes and cranberries.

Uc Davis & Italian Studies How does it work?

Recently, a group of researchers from the University of California, Davis and Italy examined the anti-inflammatory impact of cocoa flavanols. This group discussed how the production of inflammatory chemicals (cytokines) increases the risk of heart disease, such as hardening of the arteries and congestive heart failure. If the inflammatory pathways can be altered, they argued, then there would be a reduction

in heart disease.

Nuclear factor-kappaβ (NK-κβ) is one of the factors that control inflammatory response, cellular proliferation (growth), and cellular adhesion. Studies have shown that epicatechin and catechin molecules reduce NK-κβ activation, and consequently reduce inflammation cytokines.

Cocoa also demonstrates a significant effect on TNFα (tumor growth factor) which increases the body's anti-inflammatory ability. Cocoa flavanols also inhibit the formation of other inflammatory chemicals like IL-2 (interleukin).

Another chemical group, eicosanoids, which is produced through the arachidonic acid pathway, is another contributor to inflammation. Some of these chemicals promote platelet aggregation, and can vasoconstrict blood vessels. Cocoa Flavanols block the arachidonic pathway similar to COX-1 and COX-2 inhibitors. These flavanols also block the production of lipoxygenase, which is a contributor to asthma.

CACAO BENEFITS MEMORY, AGING AND IMMUNITY - FINDLAND

Cocoa flavanols are also important in many other areas. A Finnish study recently found that chocolate preference and consumption in elderly men was associated with better health, optimism, and better psychological well-being.

Medical professionals accept that oxidative stress and inflammation are major contributors to the behavioral and cognitive declines associated with aging. Cocoa flavanols, as discussed earlier, limit oxidative stress, and block inflammation, apparently helping improve memory and slowing down the aging process.

DEPRESSION & IMMUNE SYSTEM

Depression is also a very common problem in our world. A recent study found that the addition of high-flavanol cocoa extract given to rats in a forced swimming test indicated that cocoa decreased depression. We know that tryptophan from cocoa is broken down into serotonin and other compounds that fight depression and elevates mood.

Other studies have shown that cocoa flavanols improve the overall immune system. Studying rats, one group of researchers found that the cocoa-fed rats experienced an improved Th1 immune system (this system helps kill bacteria and helps cells fight off infections).

Another related rat study found that cocoa intake improved intestinal immune response by increasing those antibodies that prevent bacteria from entering the body by fighting them in the gut.

2008 - EUROPEAN STUDIES

A study conducted in November 2008 researched the benefits of cocoa flavanols on dioxins—lethal poison compounds. The researchers found that the intake of cocoa definitely suppressed the toxicological effects of dioxins in the body. In effect, the cocoa stopped the damage that this environmental poison does to the body by interfering with different pathways.

Dark Chocolate: Half A Bar Per Week May Keep Heart Attack Risk At Bay

ScienceDaily (Sep. 24, 2008) — Maybe gourmands are not jumping for joy. Probably they would have preferred bigger amounts to support their passion. Though the news is still good for them: 6.7 grams of chocolate per day represent the ideal amount for a protective effect against inflammation and subsequent cardiovascular disease.

A new effect, demonstrated for the first time in a population study by the Research Laboratories of the Catholic University in Campobasso, in collaboration with the National Cancer Institute of Milan.

The findings, published in the last issue of the Journal of Nutrition, official journal of the American Society of Nutrition, come from one of the largest epidemiological studies ever conducted in Europe, the Moli-sani Project, which has enrolled 20,000 inhabitants of the Molise region so far. By studying the participants recruited, researchers focused on the complex mechanism of inflammation. It is known how a chronic inflammatory state represents a risk factor for the development of cardiovascular disease, from myocardial infarction to stroke, just to mention the major diseases. Keeping the inflammation process under control has become a major issue for prevention programs and C reactive protein turned out to be one of the most promising markers, detectable by a simple blood test.

The Italian team related the levels of this protein in the blood of examined people with their usual chocolate intake. Out of 11,000, researchers identified 4,849 subjects in good health and free of risk factors (normal cholesterol, blood pressure and other parameters). Among them, 1,317 did not use to eat any chocolate, while 824 used to have chocolate regularly, but just the dark one.

“We started from the hypothesis,” says Romina di Giuseppe, 33, lead author of the study “that high amounts of antioxidants contained in the cocoa seeds, in particular flavonoids and other kinds of polyphenols, might have beneficial effects on the inflammatory state. Our results have been absolutely encouraging: people having moderate amounts of dark chocolate regularly have significantly lower levels of C-reactive protein in their blood. In other words, their inflammatory state is considerably reduced.” The 17% average reduction observed may appear quite small, but it is enough to decrease the risk of cardio-vascular disease for one third in women and one fourth in men. It is undoubtedly a remarkable outcome”.

Chocolate amounts are critical. “We are talking of a moderate consumption. The best effect is obtained by consuming an average amount of 6.7 grams of chocolate per day, corresponding to a small square of chocolate twice or three times a week. Beyond these amounts the beneficial effect tends to disappear”.

From a practical point of view, as the common chocolate bar is 100 grams,

the study states that less than half a bar of dark chocolate consumed during the week may become a healthy habit. What about the milk chocolate? “Previous studies,” the young investigator continues, “have demonstrated that milk interferes with the absorption of polyphenols. That is why our study considered just the dark chocolate”.

Researchers wanted to sweep all the doubts away. They took into account that chocolate lovers might consume other healthy food too, as wine, fruits and vegetables. Or they might exercise more than others people do. So the observed positive effect might be ascribed to other factors but not to cocoa itself. “In order to avoid this,” the researcher says, “we adjusted for all possible “confounding” parameters. But the beneficial effect of chocolate still remained and we do believe it is real”.

“This study” says Licia Iacoviello, Head of the Laboratory of Genetic and Environmental Epidemiology at the Catholic University of Campobasso and responsible for the Moli-sani Project, “is the first scientific outcome published from the Moli-sani Project. We consider this outcome as the beginning of a large series of data which will give us an innovative view on how making prevention in everyday life, both against cardiovascular disease and tumors”.

“Maybe,” Giovanni de Gaetano, director of the Research Laboratories of the Catholic University of Campobasso, adds, “time has come to reconsider the Mediterranean diet pyramid and take the dark chocolate off the basket of sweets considered to be bad for our health”.

New Research Study Links Dark Chocolate to Vascular Health Benefits
Wed Jul 30, 2008 9:00am EDT

Yale-Griffin Findings Highlight Hershey'(R)s Extra Dark Chocolate, Which Becomes the First Chocolate Bar to Earn Respected Best Life Seal of Approval

Research Findings:

-- Dark chocolate has a positive impact on blood pressure and blood vessel function.

-- Consuming Hershey's Extra Dark Chocolate (75g) as well as Hershey's Natural Cocoa (22g) lowered blood pressure and improved endothelial function in 45 participants 2 hours after consumption.

HERSHEY, Pa.--(Business Wire)--
Dark chocolate has come to be recognized for its flavanol antioxidant benefits, but a new study, conducted by the Yale-Griffin Prevention Research Center, has uncovered an important link to its vascular health benefits. The study, which used Hershey's Extra Dark Chocolate, reported that dark chocolate has a positive impact on blood pressure and blood vessel function. The study's release comes on the heels of Hershey's Extra Dark Chocolate, a rich dark chocolate featuring 60 percent cacao, earning renowned health and fitness expert Bob Greene's Best Life seal of approval - the first chocolate bar to earn that distinction.

"The Hershey Company is continuously looking for opportunities to offer products that support the balanced lifestyles of today's health-conscious consumers," said Debra Miller, Ph.D., Director of Nutrition, The Hershey Company. "This one-two punch of the Yale-Griffin research confirming chocolate's vascular health benefits, combined with Bob Greene's Best Life seal, makes Hershey's Extra Dark Chocolate a sensible option for people looking for small indulgences."

The Yale-Griffin Prevention Research Center study is the largest study of its kind to research the short-term benefits of solid dark chocolate and cocoa containing beverages on blood pressure and endothelial function (blood vessel function). The results of the study, recently published in the American Journal of Clinical Nutrition, found that consuming Hershey's Extra Dark Chocolate (75g) as well as Hershey's Natural Cocoa (22g) lowered blood pressure and improved endothelial function in 45 participants 2 hours after

consumption.

"Our study demonstrated impressive enhancement of endothelial function following the acute consumption of dark chocolate and cocoa," said David L. Katz, MD, MPH, principal investigator of the study and director of the Prevention Research Center. "The results are exciting because they show that dark chocolate, a highly-popular treat long associated with pleasure, has health promoting properties as well."

In addition, The Hershey Company announced that Hershey's Extra Dark Chocolate is the first chocolate bar to earn the respected Best Life seal of approval. Designed by Bob Greene, respected exercise physiologist and famed trainer, the Best Life seal appears on select grocery products and is intended to help consumers make healthier food and lifestyle decisions. Hershey's Extra Dark Chocolate's naturally occurring antioxidants and proven vascular health benefits helped the product to earn this distinction. Bob Greene will utilize Hershey's Extra Dark Chocolate and Hershey's Natural Cocoa as he helps consumers to develop balanced, healthy lifestyles through his book, The Best Life Diet, the companion website TheBestLife.com, appearances on The Oprah Winfrey Show and other national television and radio shows, and national tours.

Hershey's Extra Dark Chocolate is available wherever candy is sold. The Best Life seal of approval will begin appearing on packaging later this year.

About The Hershey Company

The Hershey Company (NYSE:HSY) is the largest North American manufacturer of quality chocolate and sugar confectionery products. With revenues of nearly $5 billion and approximately 13,000 employees worldwide, The Hershey Company markets such iconic brands as Hershey's, Reese's, Hershey's Kisses, Kit Kat, Twizzlers and Ice Breakers. Hershey is the leader in the fast-growing dark and premium chocolate segment, with such brands as Hershey's Bliss, Hershey's Special Dark, Hershey's Extra Dark and Cacao Reserve by Hershey's. Hershey's Ice Breakers franchise delivers refreshment across a variety of mint and gum flavors and formats. Hershey's partnership with Starbucks offers a premium chocolate experience that combines the highest-quality chocolate with Starbucks coffee-house flavors, for a range of delicious and distinct chocolate products. In addition, Artisan Confections Company, a wholly owned subsidiary of The Hershey Company, markets such premium chocolate offerings as Scharffen Berger, known for its high-cacao dark chocolate products, Joseph Schmidt, recognized for its fine, handcrafted chocolate gifts, and Dagoba, known for its high-quality natural and organic chocolate bars. Visit us at www.hersheynewsroom.com.

About The Best Life

The Best Life Diet is not a typical diet plan. Instead, it's a way of living--of eating, exercising and viewing life--that promotes weight loss and fosters lifelong weight control. The three-phased plan offers a gradual approach to developing healthy habits that not only increase fitness and reduce body weight, but can also dramatically reduce the risk for diabetes, heart disease and other chronic conditions. For more on the program, visit www.TheBestLife.com.

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