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Research Snapshot: Chocolate and Health

Many researchers have studied the health benefits of chocolate. Following is a small collection of significant research studies and reports related to the healthful benefits of chocolate.

Presented at American Chemical Society Meeting: Potential Cardiovascular Health Benefits of Procyanidins Present in Chocolate and Cocoa (1999)

Bearden M.M., Pearson D., Rein D., Chevaux K.A., Carpenter D.A., Keen C.L., Schmitz H.

Summary:

The protective agency of flavonoid-containing foods on cardiovascular disease may be attributed to their antioxidant activity. Recent advancements in the analysis of flavonoids, especially oligomeric procyanidins found in chocolate and cocoa, have facilitated the opportunity to investigate procyanidin fractions with regard to their potential cardiovascular health effects.

The antioxidant capacity of cocoa was determined by the Oxygen Radical Absorbance Capacity (ORAC) assay, and interestingly, the ORAC assay **demonstrated that certain cocoa powders have an antioxidant activity equivalent to or greater than that of many fruits and vegetables.**

The substantial antioxidant capacity demonstrated by cocoa powder in the ORAC assay was due at least in part to the presence of monomers and procyanidins in the powder. **This paper also shows data demonstrating that purified cocoa procyanidins are potent inhibitors of low-density lipoprotein (LDL) oxidation in vitro.**

Presented at the American Association for the Advancement of Science Annual Meeting and Science Innovation Exposition: Chocolate Flavonoids: In vitro evidence suggesting a cardiovascular health benefit (2000)

Schmitz H.H., Romanczyk L.J.

Summary:

The consumption of plant-derived flavonoids has been associated with a decreased risk of cardiovascular disease.

Postulated mechanisms include inhibition of low-density lipoprotein (LDL) oxidation and modulation of biochemical pathways involved in hypertension and platelet aggregation. Previously, we have shown that flavonoids isolated from cocoa reduced susceptibility of LDL to oxidation in vitro. The present research was conducted to determine if flavonoids, including monomeric flavanols and oligomeric procyanidins isolated from cocoa used to manufacture chocolate, have the potential to influence additional mechanisms associated with cardiovascular health.

The first experiment used a human umbilical vein endothelial cell culture to demonstrate that flavanols and oligomeric procyanidins from cocoa induce nitric oxide formation (measured as nitrite formation), with oligomeric fractions having the greatest activity.

The second experiment used cyclooxygenase-1 and cyclooxygenase-2 (isolated from sheep red blood cells) to demonstrate that flavanols and procyanidins from cocoa inhibit these enzymes at concentrations similar to effective concentrations of indomethacin. These results provide a possible mechanism that could explain the anti-platelet and vasorelaxant effects observed previously, and **support the overall hypothesis that flavonoids present in certain chocolates may have cardiovascular health benefits.**

British Journal of Nutrition: Cocoa and Health: A Decade of Research (2007)

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Abstract:

It has been over 10 years since the first mention in a medical journal about cocoa and chocolate as potential sources of antioxidants for health. During this time, cocoa has been found to improve antioxidant status, reduce inflammation and correlate with reduced heart disease risk; with these results, and its popularity, it has received wide coverage in the press. However, after 10 years of research, what is known about the potential health benefits of cocoa, and what are the important next steps in understanding this decadent source of antioxidants?

<http://journals.cambridge.org/action/displayAbstract?aid=1233080>

Appetite: Immediate effects of chocolate on experimentally induced mood states (2007)

Macht M, Mueller J.

Department of Psychology (Biological Psychology, Clinical Psychology and Psychotherapy), University of Würzburg, Marcusstr. 9-11, 97070 Würzburg, Germany.

Abstract:

In this work two hypotheses were tested: (1) that eating a piece of chocolate immediately affects negative, but not positive or neutral mood, and (2) that this effect is due to palatability. Experiment 1 (48 normal-weight and healthy women and men) examined the effects of eating a piece of chocolate and drinking water on negative, positive and neutral mood states induced by film clips. Eating chocolate reduced negative mood compared to drinking water, whereas no or only marginal effects were found on neutral and positive moods. Experiment 2 (113 normal-weight and healthy women and men) compared effects of eating palatable and unpalatable chocolate on negative mood, and examined the duration of chocolate-induced mood change. Negative mood was improved after eating palatable chocolate as compared to unpalatable chocolate or nothing. This effect was short lived, i.e., it disappeared after 3 minutes. In both experiments, chocolate-induced mood improvement was associated with emotional eating. The present studies demonstrate that eating a small amount of sweet food improves an experimentally induced negative mood state immediately and selectively and that this effect of chocolate is due to palatability. It is hypothesized that immediate mood effects of palatable food contribute to the habit of eating to cope with stress.

European Journal of Clinical Nutrition: Chocolate, well-being and health among elderly men (2007)

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Oulu, Finland; ²Department of Medicine, Geriatric Clinic, University of Helsinki, Helsinki, Finland;

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Abstract:

We hypothesized that chocolate preference would be related to health and psychological well-being in old men. We have followed up a socioeconomically homogenous group of men, born in 1919–1934, since the 1960s. In 2002–2003, a mailed questionnaire was used to assess the health and well-being (including questions related to positive life orientation, visual analogue scales and the Zung depression score) of survivors. In addition, candy preference was inquired. Those men who reported no candy consumption (n¼108) were excluded from the analyses.

Outcome measures: Psychological well-being in old age.

Results: The response rate was 69% (1367 of 1991). Of the respondents, 860 and 399 preferred chocolate and other type of candy, respectively. The average age in both candy groups was 76 years. Of the respondents, 99% were home-dwelling, 96% were retired and 87% were presently married, without differences between the candy groups. Men preferring chocolate had lower body mass index and waist circumference, and they also reported more exercise and better subjective health ($P=0.008$) than other candy consumers. Variables related to psychological well-being were consistently better in those preferring chocolate. The differences were statistically significant in feeling of loneliness ($P=0.01$), feeling of happiness ($P=0.01$), having plans for the future ($P=0.0002$) and the Zung depression score ($P=0.02$).

Conclusions: In this socioeconomically homogenous male cohort, chocolate preference in old age was associated with better health, optimism and better psychological well-being.

Cancer Letters: Flavanols and procyanidins of cocoa and chocolate inhibit growth and polyamine biosynthesis of human colonic cancer cells (2002)

Carnesecchi S., Schneider Y., Lazarus S.A., Coehlo D., Gosse F., Raul F.

Summary:

This study examined the effects of cocoa powder and extracts with different amounts of procyanidins on the growth of Caco-2 cells, a human colonic cancer cell line, and on polyamine biosynthesis, which is known to be enhanced in cancer.

Procyanidin-enriched extracts from cocoa inhibited the growth of human colon cancer cells and caused a significant decrease in the intracellular pool of the polyamines. These observations indicate that polyamine metabolism might be an important target to the anti-proliferative effects of cocoa polyphenols.

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