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ALMONDS AND CHOCOLATE, THE PERFECT COMBINATION FOR CARDIOMETABOLIC HEALTH?

Incorporating almonds, dark chocolate and cocoa into a healthy isocaloric diet may reduce the risk of cardiovascular disease.



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Cardiovascular disease (CVD) is one of the main causes of morbidity and mortality in developed countries. Metabolic alterations such as elevated plasma levels of low-density lipoprotein cholesterol (LDL-c) and triglycerides (TG), hypertension (HTA), type 2 diabetes mellitus (T2DM), overweight (OW) or obesity (OB) and some lifestyle factors are considered risk factors for developing CVD. Moreover, an unhealthy diet has been recognized as an important modifiable cardiovascular risk factor¹ and therefore a key issue for cardiovascular disease prevention².

Since the publication of the main results from the PREDIMED study, which showed that a Mediterranean diet, typically low in saturated fatty acids (SFA's) and high in monounsaturated (MUFA's) or polyunsaturated (PUFA's) fatty acids, and rich in phytochemicals supplemented with extra-virgin olive oil or with mixed nuts, reduced the incidence of cardiovascular events by 30% compared to a lower-fat control diet³. The quality of dietary fat has been recognized as being even more important than the total amount in the prevention of cardiovascular diseases.

In addition, several epidemiological studies⁴ have demonstrated that, compared to those rarely consuming nuts, individuals that frequently consume nuts had a reduced risk of CVD. These benefits have been attributed to their lipid composition profile (high in unsaturated fatty acids and low in saturated fatty acids), and the presence of high amounts of bioactive compounds such as antioxidant vitamins, polyphenols, some minerals, phytosterols, plant protein, and fiber.

It is not only dietary fats that have been studied in relation to CVD prevention. Flavonoids, a subclass of polyphenolic compounds known for their antioxidant capacity, have been proposed as cardioprotective molecules due to the insulin resistance reduction, and the improvement of endothelial function and blood pressure in adults⁵. Given that cocoa

and dark chocolate have been recognized for their high flavonoid content (in even higher amounts per weight than red wine, black tea, cranberry juice and apples⁶) several studies have been conducted in order to understand their possible effects on cardiovascular risk factors⁷.

Considering the health benefits of these nutrients, in recent years health professionals and investigators have invested time looking for alternative options to increase their intake through diet. Recently, a group of researchers from The Pennsylvania State University developed a randomized, 4 period, crossover, controlled-feeding trial to investigate the single and combined effects of dark chocolate, cocoa, and/or almond on peripheral lipid, lipoprotein, and apo-lipoprotein

Promising results would support the recommendation of the incorporation of almonds, alone or in combination with dark chocolate and cocoa, as an alternative snack as part of a healthy isocaloric diet, in order to reduce the risk of CVDs.


concentrations⁸. Participants were randomly assigned to receive one of four diets: (1) No treatment food (an average American diet), (2) an almond enriched diet (42.5 g/d of almonds), (3) a chocolate enriched diet (18 g/d cocoa powder and 43 g/d of dark chocolate), or (4) a chocolate and almond enriched diet.

It was observed that compared with an average American diet, an almond enriched diet reduced total cholesterol, non-high density lipoprotein cholesterol (non-HDL-c) and LDL-c by 4%, 5% and 7%, respectively (P-value<0.05). Even when the consumption of almond and chocolate decreased LDL-c by a comparable degree, different treatment effects on LDL subclasses were observed. It has been shown

that the combination of dark chocolate with almond consumption lowered apo-lipoprotein B (ApoB) by 5% and therefore the ApoB/Apo-lipoprotein A1 (ApoA1) ratio compared with the average American diet (0.7 ± 0.0 compared with 0.8 ± 0.0 P-value=0.02).

These findings are of clinical significance since ApoB is an important atherogenic component of lipoprotein particles (especially VLDL and LDL). Unlike apo B, ApoA1, as the major apo-lipoprotein of the HDL particles, has been associated with a lower risk of developing inflammatory response and atherosclerotic plaque growth. Therefore the ApoB/ApoA1 ratio has been considered a better predictive value than classical lipid parameters in cardiovascular risk assessment⁹.

Even when higher levels of fasting glucose were observed after a chocolate enriched diet and chocolate with almonds diet (attributed to higher amounts of sugar compared with the other tested diets), no effects on serum insulin, homeostasis model assessment of insulin resistance, and high-sensitive C-reactive protein were reported.

These promising results would support the recommendation of the incorporation of almonds, alone or in combination with dark chocolate and cocoa (as the chocolate and almond diet had shown to influence both quantity and quality of LDL-c), as an alternative snack as part of a healthy isocaloric diet, in order to reduce the risk of CVDs. Nevertheless, these recommendations should be followed with caution to avoid an excess of calories and consequently an increase in body weight. 



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