

Cacao and natural immunity – 8 beans per day keeps the doctor away

Have you ever heard the saying 8 cacao beans per day keeps the doctor away? The reason for this is that Cacao and the many products derived from the *Theobroma cacao* tree contains high levels of antioxidant molecules that can protect our body from cellular damage and boost our immune system¹. What are antioxidants? Why do we really need them? And do all antioxidants have equal effects? All these questions will hopefully be answered by looking at the body and how it changes with cacao.

When we eat, we break down our food into simple sugars like glucose. This glucose is taken into the cells and combined with oxygen to make energy to support all our life-sustaining metabolic pathways. These processes occur in a part of our cell called the mitochondria – or the ‘powerhouse of the cell’². This natural process of energy production comes with a price as we also produce some nasty by-products known as **reactive oxygen species (ROS)** as a result of burning energy^{2,3}. Think of it like a car engine, fuel is consumed to power the car and at the same time we make oxidative by-products like smoke or soot that can damage the engine over time. In fact, in an average year a normal person will make 2kg of these ROS molecules that can potentially harm our bodies⁴.

These ROS are damaging to our body as they ‘react’ with our cells and can begin to create inflammation, which can upset our different systems, leading to disease⁵. Despite being bad for us some ROS are useful as they play an important role in the way cells communicate but also in our immune system to attack unwanted bacteria and viruses^{6,7}. So in essence we need them to survive but too many ROS can be damaging, therefore the levels are tightly controlled in our body by our defence systems and antioxidants. Antioxidants play the important role of neutralising ROS and putting out the inflammatory fire they create. An imbalance between the production of ROS and the ability to neutralise or to repair the resulting damage is termed **oxidative stress**^{8,9}. It is like having a fire in your cells that is difficult to extinguish.

Oxidative stress is a contributing factor in the progression of diseases like Alzheimers¹⁰, rheumatoid arthritis¹¹, diabetes¹², hypertension¹³ and even cancer¹⁴. So increasing levels of antioxidants can assist to balance the levels of ROS and protect from disease¹⁵. A diet high in certain antioxidants can protect against free radical damage to cells and reduce the risk of cardiovascular disease¹⁶⁻¹⁸, cancer¹⁹⁻²⁰, neurodegenerative disease²¹, inflammation, and premature aging³.

There are many different types of antioxidants that work in different ways, most of which we get from foods we eat. Dietary antioxidants include molecules like flavonoids, Vitamins E and C, beta-carotene, lycopene, selenium, omega-3 and -6 fatty acids and lutein^{22,23}. Flavonoid is a general term that encompasses the subclasses of flavonols, flavanones, flavones, isoflavones, flavonols and anthocyanidins²⁴. All of these molecules are highly effective at neutralising ROS and helping return the body to a healthy oxidative balance.

So how can 8 cacao beans per day keep the doctor away? Well cacao contains antioxidant polyphenols including flavanols, proanthocyanins, and anthocyanidins^{25,26}. The flavonol subclasses found in cacao include quercetin, catechin, and epicatechin²⁴. All of these molecules are powerful neutralisers of ROS and can help protect your cells from oxidative

stress. The concentration of flavanols in cacao powder for example is higher than blueberry, cranberry, and pomegranate powder and has demonstrated a higher antioxidant capacity in a gram by gram comparison²⁷. So, cacao is literally a superfood capable of keeping ROS in check and as such the doctor at bay as the risk of disease for many conditions is lower when the body has a balance of ROS and antioxidants. The question then begs - is chocolate healthy? And can eating chocolate also keep the doctor at bay? Well the answer depends on the chocolate, the cacao used, the sugar to cacao mass ratio and the levels of antioxidants in the cacao.

In contrast to the high antioxidants found in raw cacao powder for example, milk chocolate products do not produce significant antioxidant effects in humans²⁵. Raw, unprocessed cacao beans retain the highest antioxidant quantity and quality, which is degraded in roasting, fermenting, extraction and alkalization²⁵⁻²⁸. In essence, the more processed and diluted the cacao from the original bean the less effective for maintaining good health. It has been shown that cacao flavonol consumption in amounts of 2000mg per day (2g) is tolerated well in healthy adults²⁹.

What about clinical studies with cacao? In a laboratory study, consumption of cacao powder increased antioxidant enzyme levels in the heart and liver³⁰. Cacao improved blood vessel health acutely, two hours after ingestion, and continued in chronic intake³¹. Sugar-free cacao significantly improved blood vessel cell function more than regular cocoa. Therefore, cacao powder is better than chocolate for your circulatory health. Specifically, the flavonol epicatechin improved blood vessel health in a dose-dependent rate, meaning the higher the intake of epicatechin, the more blood vessel measurements improved^{32,33}.

High-flavonol content cacao reduced blood pressure in an analysis of 33 clinical trials comprising of 1482 healthy adult participants³⁴. In a further analysis of 42 randomized clinical trial studies, cacao consumption reduced insulin resistance and improved factors of blood vessel health for those with metabolic syndrome and diabetes³¹. Cacao flavonol intake over a short term (two weeks) and long term (over three months) both reduced exercise-induced oxidative stress in human studies^{35,36}. Therefore, several studies demonstrate that flavonols, such as those in cacao, improve vascular and physical health.

In summary cacao is a superfood packed with natural antioxidants that can return your body to oxidative balance and reduce your risk of disease. The antioxidants in cacao benefit your immune system, blood vessel and brain health and can reduce inflammation and risk of inflammatory diseases like Alzheimers, autoimmunity, rheumatoid arthritis, diabetes, hypertension and even cancer. So if you want to improve your health and longevity then all you need is 6-8 beans per day of quality cacao.

SEO keywords: cacao, cacao powder, cacao tree, cacao vs cocoa, what is cacao, antioxidant, what are antioxidants, antioxidant food, define antioxidant, antioxidant rich food, high antioxidant, cocoa antioxidant, cacao antioxidant

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