

The truth about chocolate

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In New York four years ago, a 53-year-old woman arrived in hospital unable to talk, with weakness and tingling fingers and a heart pounding at 165 beats per minute - well above the normal 60 to 100 beats range. She had eaten a whole box of chocolates, sending her heart into overdrive.

The woman had no history of a racing heart and the arrhythmia appeared to have been spontaneously induced by overdosing on chocolate, a commonly craved food.

Chocolate is clearly a sweet spot for many, with 3 million tonnes of cocoa beans consumed globally each year. Australia was the ninth-largest importer of cocoa powder, at almost \$60 million in 2009, according to the World Cocoa Foundation.

Mayans, who worshipped the Ixcacao goddess, believed the cacao tree was a divine gift and symbolised fertility. Its sweet derivative, chocolate, is recognised among scientists as an antioxidant and can lift sombre moods. In the armed forces, it has long been included in ration packs as part of a balanced diet.

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Roald Dahl's character, Charlie Bucket, in the book *Charlie and the Chocolate Factory*, reveals that even the sight of the stuff evokes emotion: "Walking to school in the mornings, Charlie could see great slabs of chocolate piled up high in the shop windows, and he would stop and stare and press his nose against the glass, his mouth watering like mad. Many times a day, he would see other children taking bars of creamy chocolate out of their pockets and munching them greedily, and that, of course, was pure torture."

But is chocolate our friend or foe when it comes to our health and the impact of its production, worldwide?

The likely culprit of the New York chocolate lover's health woes was a component of cocoa, says Dr Saurabh Parasramka, an emergency doctor at the hospital whose case study was published in the *American Journal of*

Emergency Medicine.

"Since methylxanthines - theobromine and caffeine - are a component of cocoa and a competitive antagonist of the adenosine receptor, it is not surprising that when consumed in excess and in patients with substrate for supraventricular tachycardia, these arrhythmias can be induced easily," Parasramka says.

"We were not able to quantify the amount of chocolate [the patient consumed, but] she did have at least one box and maybe more."

Biochemist Dr Libby Weaver says some people cannot eat chocolate, "but I can't tell you if that's simply the caffeine, and the same thing might happen from coffee, or if it's the theobromine or other substances from the cacao pod itself that's having those effects".

"I've had clients who just can't eat it at any time of the day because their heart just starts racing," Weaver says.

"They notice it immediately - [in] five to 10 minutes they'll notice their heart racing."

For people fond of chocolate, pure nibs straight from cacao pods, and dark chocolate, are healthier choices than chocolate containing more refined sugar and other additives, she says.

Weaver also cautions against giving too much to people with heightened sensitivity to it, such as children, whose ability to sleep, learn and concentrate could be affected by its consumption.

"If you own a dog, you're told never to give your dog chocolate. It's really not good for them," Weaver says.

"Now, I know humans and dogs are different species, but with young children, obviously their nervous system and their whole endocrine system are still very immature and I worry about the effects of too many stimulatory substances going into smaller bodies. When we're adults, we can handle more."

There are plenty of studies that support chocolate consumption. A German study featured in the *European Heart Journal* found that eating chocolate appeared to lower the risk of cardiovascular disease, in part through reducing blood pressure.

University of Granada researchers, whose study is published in *Nutrition*, claim to have disproved the old belief that chocolate is fattening, finding that the more chocolate you eat, the lower your body fat, even when you don't exercise.

The principal author of the study of 1500 adolescents in Spain, Magdalena Cuenca-Garcia, says chocolate is rich in flavonoids, especially catechins, "which have important antioxidant, antithrombotic, anti-inflammatory and antihypertensive effects and can help prevent ischaemic heart disease".

However, chocolate consumption should always be moderate, she says.

Epidemiological evidence supports the notion that long-term flavanol intake provides several health benefits, including neurocognitive enhancement and neuroprotective effects, according to Swinburne University of Technology Professor Andrew Scholey, at the Centre for Human Psychopharmacology, in a review of the effects of chocolate on cognitive function and mood published in *Nutrition Reviews*.

Socially, though, there are questions to be raised about knowing the origin of what goes into our mouths and the ramifications of the global demand for chocolate's main ingredient, cocoa.

First you plant a tree ...

● **Cacau (theobroma) tree:** The tropical tree that produces cocoa beans. Theobroma means "food of the gods"

● **Cocoa bean:** The seed of the cacao tree, called a cocoa bean only once it's removed from the pod in which it grows

● **Cocoa pod:** The leathery oval pod that contains cocoa beans

● **Chocolate nibs:** The "meat" of the cocoa bean remaining when the shell is removed in the chocolate production process

worldcocoafoundation.org/about-cocoa/cocoa-glossary/

In the same year the 58-year-old New York woman was being hooked up to heart monitors because of an overdose of chocolate, Interpol was rescuing 54 young children of seven different nationalities employed illegally as workers under horrific conditions in West African cocoa plantations, which produce more than 40 per cent of the world's cocoa supplies.

Interpol says the children had been bought by plantation owners needing cheap labour to harvest cocoa and palm crops, carrying massive loads and regularly working 12 hours a day with no access to salary or education.

Canadian Carol Off, author of *Bitter Chocolate*, says while the vast majority of celebrations of life are associated with chocolate, few of us know how it reaches us, with reference to child labour.

"Two or three days of their work [in plantations] is required for a chocolate bar," Off says in a YouTube recording. "Two or three days of their lives is consumed in a heartbeat on the other side of the world."

Danish journalist Miki Mistrati reported witnessing child labour in West Africa in his 2010 documentary *The Dark Side of Chocolate*, in which he challenged chocolate manufacturers to take action to stop such exploitation. During filming, he appeared alarmed by the unsolved kidnapping and suspected murder of French-Canadian journalist Guy-Andre Kieffer, who was known to have asked questions about cocoa industry practices before disappearing in Abidjan, the capital of Ivory Coast, in 2004.

Nestle Australia announced last year that every chocolate it sells is now independently certified to ensure the cocoa is sourced and produced sustainably on farms with safe working conditions under the Nestle Cocoa Plan to help farmers eliminate child labour and bring about sustainable and profitable farming.

"Our work with West African cocoa farmers is helping to address the issues facing the farmers and their communities, while giving Australian consumers the confidence that the cocoa in them has been produced sustainably," Nestle Australia's business executive manager confectionary and snacks, Martin Brown, said when announcing the plan.

Cadbury says its Dairy Milk product is Fairtrade certified to help improve the lives of Fairtrade cocoa farmers and their families in developing countries.

Haigh's Chocolates says it is "serious about our responsibilities to trading fairly whether we are sourcing ingredients locally or overseas".

While Australia doesn't have a viable cocoa-growing industry, Haigh's says it imports premium priced, raw high-quality cocoa beans from various countries, including Ecuador, Papua New Guinea and Ghana, and roasts and blends them locally.

"Through our industry association, the Australian Industry Group - Confectionery Sector (Ai Group), we are part of a global partnership with governments, non-government organisations and industry, including the International Cocoa Initiative, to improve the lives of West African cocoa farmers and their families through a public certification process," it says on its website.

As for the woman who ate the box of chocolates and ended up needing medical intervention to restore a normal heart rate, the doctor says it is the only such case he has seen.

"This is the only case of arrhythmia with chocolate I have come across, so I assume it's rare. However, I have seen more cases of people coming in with palpitations after consuming energy drinks, which does have caffeine in it," Dr Parasramka says.