

# THE SECRET LIFE OF CHOCOLATE

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AEON



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## *DISCLAIMER*

**T**he information in this book should be used responsibly. The author does not endorse the use of any illegal substances. Any attempt to replicate the formulas in this book or to utilise the information contained herein is undertaken at the discretion of the reader, and is their responsibility; the author accepts no liability for any harm arising from medicinal or culinary uses of chocolate or other substances described in this book. All medicinal recommendations should be checked with your physician, qualified medical herbalist, or accredited health professional.

Every attempt has been made to ensure that sources are properly cited and acknowledged. I've endeavoured to present the historical, scientific, anthropological, and philosophical information in this book accurately, although some of it (particularly the neurophysiology in Chapter 5 and the philosophies of consciousness in Chapter 10) were pushing the limits of my competence, so any mistakes, misapprehensions, or non sequiturs are unlikely to be the fault of the cited authors.



## A WORD ON ANIMAL EXPERIMENTS

When I began researching this book in 2006, I was omnivorous. In 2014 I became vegan. Since then I debated removing all the research based on non-human animal experimentation from the book, but that would have obviated years of research and eliminated a lot of the evidence, particularly the already-sparse support for the central hypothesis of Cacao's psychoactivity beyond its accepted role as a sort of vegetable caffeine-and-polyphenol delivery system. I also consider that, while I disapprove of the method, the results of non-human animal experimentation are still valid. Similarly, I have not excluded unethical experimentation on humans from the mid-twentieth century, such as force-feeding chocolate to inmates of mental asylums to test its effects on their teeth, or performing fake surgery on angina patients without their consent to test the effectiveness of the operation. Information isn't invalidated by immoral methodologies.

It's unfortunate that animal torture is still used to test medicinal substances, particularly in the case of plants and foods such as Cacao which are known to be safe for human consumption, simply because such experiments are much cheaper than human clinical trials. There are also fewer restrictions on the type of testing which can be done, because non-human animals are considered to be expendable. It's my hope that in future, we will move towards a more ethical and sustainable diet and cease to see similarly sentient\* beings as food, now that the majority of people living in developed countries have no morally or technically defensible reason for continuing to consume them, and a plethora of ethical and environmental reasons for ending the factory farming of livestock. Eventually, lab-grown human organs and other developments may enable us to replicate conditions inside human bodies and allow testing on non-sentient living tissue, and experimenters will adopt more ethical forms of experimentation—if the scientific paradigm itself hasn't been superseded by then.

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\*I suspect that eventually, plants will be recognised as sentient too, albeit in a different way from humans: see recent excellent books by Monica Gagliano and Stefano Mancuso for research evidence of consciousness in plants. That doesn't invalidate the general ethical argument for a plant-based diet, though, as plants don't appear to feel pain, at least not as we know it, and many more plants are required to sustain cattle than would be necessary if we just ate the plants. Nor does plant agriculture contribute to environmental damage and pollution on anything like the same scale as livestock farming. Admittedly, though, scientific proof that plants are self-aware could cause more intensely ethical vegans to have a bit of a crisis.



## INTRODUCTION

Mrs Doyle: "... and speaking of cake: I have cake!"

Father Ted: "I'm fine for cake, Mrs Doyle."

Mrs Doyle: "Are you sure, Father? There's cocaine in it!"

Father Ted: "There's what?"

Mrs Doyle: "Oh no, not cocaine! What am I on about ... No, I meant, erm—what do you call them—raisins."

(from *Father Ted*, Series 2, Episode 1, "Hell")

Sadly, Mrs Doyle's cocaine would be a poor choice of cake adulterant. It would taste bad, and have very low bioavailability—when swallowed, cocaine is swiftly broken down in the liver before it gets into the general circulation, so has greatly reduced effects when consumed orally. Hence the practices of snorting, smoking, or injecting various preparations of the drug, to bypass the stomach and get it straight into the bloodstream, with increasing potency. So cocaine would be a bad baking choice for these reasons, not to mention its expense or toxicity. Ideally, Mrs Doyle's stimulant-laced cake should incorporate a different drug, one which is more widely available, and cheaper; a substance which also produces a "high" or subjectively improved mood when orally consumed, and may improve sociability if eaten regularly; a drug which tastes good, has low toxicity, and benefits health so much that it may even extend the human lifespan. In other words, she should have used chocolate.<sup>1</sup>

Chocolate is made from the toasted seeds of the tree known by the botanic name *Theobroma cacao*. In common with other psychoactive cash crops like tobacco, nutmeg, and opium, wars have been fought for control of the regions where this plant can be cultivated. Chocolate, in one form or another, has been historically associated with contracts and celebrations, with medicinal virtue and poisonous vice, and at least as much with slavery and sacrifice as with sex and romance. Actually Mrs Doyle's drug of choice, tea, has a similar back story in many respects,

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<sup>1</sup>It should however be pointed out that cake is not the best medium for delivering drugs which are sensitive to heat, oxygen, or the presence of protein, as many of the compounds in chocolate are. Chocolate cake, even more than tablet/bar chocolate, sacrifices pharmacological potency for the sake of flavour and texture; the stimulating compounds caffeine and theobromine survive, but most of the antioxidant polyphenols will not. Which admittedly is a sacrifice many are willing to make.

both chocolate and tea being caffeine-containing stimulants over which (amongst other reasons) nations brawled, and whose traditional reputation for possessing health-enhancing properties are now being ratified and defined by experimental science. But tea just doesn't have the *sexy* reputation that chocolate has. The words which occurred to a sample of people to describe chocolate included "delectable", "luscious", "intoxicating", and "delicious", but also "guilt producing" and "sinful"!<sup>1</sup> My summary of the two main themes chocolate elicits for people would be first: pleasure, and second (sometimes): guilt—in that order. See what I mean? Sexy.

So why is Mrs Doyle's improbable cocaine/raisins mix-up amusing? It's probably because of the extreme contrast between the illegal stimulant cocaine, a notorious chemical isolated from the leaf of the generally rather benign Andean shrub *Erythroxylum coca*, and the innocuous raisin, dried fruit of the grape vine *Vitis vinifera*, not to mention the excellent comic performances of Pauline McLynne and Dermot Morgan. But this distinction raises another interesting question—where does food stop and drug begin? This isn't as simple to resolve as it may seem. Many foods and condiments contain compounds which act in drug-like ways, in other words they mimic or interfere with the various substances produced by the human body that regulate its function, such as hormones, neurotransmitters, or enzymes.

Examples of such interactions are plentiful, such as the isoflavones genistein and daidzin from soy beans interacting with oestrogen receptors,<sup>2</sup> peptides derived from gluten in wheat<sup>3</sup> and casein in milk binding to opiate receptors,<sup>4</sup> or compounds found in garden sage (*Salvia officinalis*) that affect a neurotransmitter (messenger chemical between nerve cells) called acetylcholine.<sup>5</sup> Food can also be preventive or curative of medical conditions, from gross nutrient deficiency syndromes such as scurvy or pellagra (vitamin C/ascorbic acid and vitamin B3/niacin deficiency, respectively), to more subtle imbalances such as essential fatty acid intake possibly linked to changes in inflammatory pathways.<sup>6</sup> Hence that old Greek doctor Hippocrates' famous injunction, sadly often ignored or distorted to faddish and foolish extremes: let food be your medicine and medicine be your food. In fact, the pleasure we take in eating and our desire for food itself is a product of internal neurochemical messages; sugars and fats, for example, both trigger the release of pleasure-giving endorphins in the brain when they are eaten.<sup>7</sup> So in this sense, every food is a drug. Even—and perhaps especially, given their high concentration of natural sugars—raisins.

We now perceive chocolate as a sweet, a naughty indulgence, and more recently as an "antioxidant-rich" health food too. While chocolate is still highly regarded, at least in the sense of being appreciated, its modern status is much reduced from the revered substance it once was in pre-Columbian Central America. The fruits and seeds of *Theobroma* species were transformed into numerous beverages by the inhabitants and used for many different purposes—secular, religious, celebratory, ceremonial, medicinal, and magical. Central America is one of the most bio-diverse regions in the world, with a panoply of different medicinal and psychoactive plants. So it's not as if there weren't stronger drug plants available, yet Cacao assumed the culturally pre-eminent place among Mesoamerican peoples' use of psychoactive flora, analogous to coca leaf (*Erythroxylum coca*) in the Andes, or kava (*Piper methysticum*) in Polynesia. What made Cacao, of all plants, so precious?

As a chocolate consumer by inclination and medical herbalist by trade, I'm fascinated by the pharmaceutical history and medicinal properties of *Theobroma cacao*, the "cocoa tree", and its associate plants: how chocolate was made and consumed in the past by the societies it came from, what medicinal and magical properties it was thought to have, and how modern pharmacological investigations into Cacao and its associate plants (e.g., the vanilla vine) can help to explain chocolate's continuing allure. I want to peel back the layers of European historical adaptations to Cacao, and reveal more of the cultural significance of Cacao throughout history and prehistory, and its substantial medicinal properties. My epicurean interest in chocolate is born from a desire to improve a pleasurable substance—to make it both more healthful *and* more gratifying, as a food and as a drug. Instinct, experience, and information led me to conclude that the best way to improve chocolate would be to investigate its origins and the oldest, time-tested traditional methods of preparation and use. Although the stronger forms of commercially processed Cacao, such as "dark chocolate", do possess notable, sub-coffee stimulating effects, and have vaunted potential health-promoting qualities, the traditional forms were more potent, being made with the finest quality beans, toasted and ground by hand, without added fat, sugar, or milk, and spiced with native herbs. A conquistador's account describes the effect of traditional Cacao drinks at the time of the Spanish conquest:

This drink is the healthiest thing, and the greatest sustenance you could drink in the whole world, because he who drinks a cup of this liquid, no matter how far he walks, can go a whole day without eating anything else. (Anonymous Conqueror, 1556, quoted in Coe & Coe, 1996)

a bit stronger than a cup of cocoa, then. Some commentators have speculated that a combination of malnutrition and caffeine naivety (tea or coffee had not yet gained a foothold in Europe) meant that the native drinks affected the Spanish conquistadors much more than they would affect a contemporary caffeine-tolerant European; those hardy men were used to marching on empty stomachs in the most abject conditions, so a fat-rich low-caffeine emulsion in the form of a Cacao-based beverage would have had an inordinately noticeable effect. This may be so, but it's my personal and oft-repeated experience that traditionally made chocolate drinks are much more pleasurable and potent than factory-processed chocolate. My own attempts to recreate traditional pre-Colombian chocolate drinks in the process of researching and writing this book led me to conclude that the anonymous conquistador's account is largely accurate: traditional Cacao-based drinks are psychoactive and sustaining drugs, more intense and delectable than their mass-produced sweet bastard offspring which we call "chocolate".

Research into the polyphenols found in chocolate, wine, tea, and many other foods has uncovered a multitude of hitherto undiscovered health benefits, and dark chocolate in particular is now suspected of being one of the most protective foods against heart disease and stroke.<sup>8</sup> But no natural product, be it food or drug, is a panacea. A great many health claims have been extrapolated from research findings, and the "raw food" movement in particular has latched on to the exceptionally high levels of polyphenols in raw, untoasted Cacao, thereby claiming that chocolate produced from untoasted beans is healthier and tastier than cooked forms.<sup>9</sup> I wanted to investigate the veracity of these claims, and simultaneously explore the pharmacology of the

bean as thoroughly as I possibly could to try to pin down the truth about chocolate's purported health benefits. While this book does propose some hypotheses about Cacao's pharmacological activity and sociocultural utility which may be considered far-fetched, I've taken care to state my sources and outline my reasoning, so that readers may make their own decisions on whether to follow me round some of the tighter intuitive U-bends.

I also have a personal reason for wanting to root out the facts here. I'm a recovered binge-eater and former recreational drug user, and a chocophile. My days of regular pharmaceutical drug use are confined to my time as an art student, a three-year period in my late teens and early twenties. I was accustomed to using MDMA or amphetamine (and alcohol, cannabis, LSD, etc.) most weekends, eating very little, and a favourite Sunday night post-clubbing dessert was a bowl of sliced banana with melted dark chocolate. Shortly after quitting weekend pharma drug use completely, I went through what in retrospect was a couple of months' acute psychosis, convinced that someone was living in my attic, creeping out and moving my stuff around when I was out of the house, along with an endearing facial tic (eye twitching) and a habit of grinding my teeth constantly.

A binge-eating disorder developed insidiously about a year and a half after going cold turkey on pharmacological revelry (except for occasional recreational or ceremonial use of natural products of geographically variable legality such as cannabis, khat, or *Psilocybe* mushrooms), and lasted for eight months of escalating intensity. That eating disorder was subsequently resolved, with amazing speed, through the intervention of a very close wise friend and a sensible nutritionist. But my curiosity was piqued when, three years later, during my herbal medicine BSc, I came across a journal article detailing several case histories of binge eating of "carbohydrates" associated with chocolate craving, which developed up to three years following regular MDMA use.<sup>10</sup> Coincidence? I had experienced every manifestation of the cases' problems, from social paranoia and outbursts of anger to sleep-wake cycle inversion. The real question for me, though, was this: why chocolate?

Finally, I wanted to look at the mythology of chocolate, because it came from an area of the world whose history I've always been drawn to. From childhood I was obsessed by Mesoamerican history: the Aztecs and Montezuma, the Maya, the tales of the savage, sophisticated, beautiful, and brutal empires discovered and destroyed by the conquistadors in the sixteenth century. It was never taught at school—all our history was *boring* old Tudors,<sup>ii</sup> or the more interesting but still familiar Greeks and Romans, so I spent hours of my pre-teen life in the school library reading about the Maya and the Aztecs and their mysterious, alien civilisations; drawing costumes and weapons and cities and inventing armies and imagining what it must have been like to live in such a time and place. Part of the long journey of writing this book has been self-funded solo travels round Mexico and Guatemala in search of the remnants of the past, to get an authentic echo of the cultures who pioneered the use of the "cocoa bean" as a drug and a food.

So this book is an effort to dispel the ersatz glamour of confectionery adverts, to moderate the unremittingly positive spin of the food industry or diet gurus, and to delve into the historical,

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<sup>ii</sup>Childhood opinion. I quite like them now.

pharmacological, and mythological roots of chocolate. It's my attempt to rediscover the drugs made from Cacao in their original form, without added milk, fat, sugar, or commercial elaboration: the rich dark heart of chocolate, stripped of Europe's and America's sickly sweet, off-white confectioner's refinements. I'd be glad if, in some small way, this book helped to restore *Theobroma's* rightful prominence as the "food of the gods"—the demanding, ruthless gods of ancient Mesoamerica, who knew that life is brief, bitter, and beautiful, and required reciprocal dedication and sacrifice in exchange for the world they immolated themselves to create.