

The Effects of the Phytochemistry of Cocoa on the Food Chemistry of Chocolate

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Abstract

Consumers primarily rate "chocolate brands" based on flavour and texture as opposed to packaging. A chocolate bar's texture and flavour are greatly determined by the type of cocoa used in its manufacture, but its bioactive ingredient is directly impacted by the method(s) employed in the manufacturing of the chocolate as well as any additives. The best varieties of cacao must be utilised because it is a crucial component in the manufacturing of chocolate in order to safeguard customer interests. The only reason the African species is currently in high demand for chocolate making rather for its flavour is because it is readily available. As a result, a genetic transfer from high-yielding and hardy African varieties to high-quality cocoa breeds would presumably boost the year-round availability of high-quality cocoa beans as well.

Keywords: Bioactive ingredient • Phytochemistry • Cote d'Ivoire

Introduction

One of the most valuable crops in the world, the cocoa (cacao) plant contains a wide range of bioactive compounds that are helpful in medicine and physical therapy, as well as a partial inclination to religion and folk medicine. It was once utilised as food, drink and a "holy" object for rituals; this custom is still followed in some regions of Africa. Theo- "God" and broma- "Food" are two Greek words that are combined to form the generic name "Theobroma." These days, cocoa is used mostly by the food production industry, pharmaceutical firms, tobacco, wine industries, etc., making it far more significant to humanity than it was in the past. [1].

Description

In order to increase the yield per hectare of cocoa produced in West and Central Africa as well as transition Africa toward sustainable cocoa production in the near future, a more effective solution is to develop genetically modified cocoa species with greater resilience to diseases and pests, high yielding, drought tolerant, durable with good flavour and high bean quality, etc. The existing African cocoa species should undergo rigorous genome editing in order to create a genetically stable (Transgenic or Mutagenic) variety with greater quality, flavour and improved phytochemistry that can easily adapt to the climatic and edaphic factors of the continent's terrain [2]. Africa, specifically Cote D'Ivoire, Ghana, Nigeria, Cameroun, Sao Tome and Principe, among others, is where it is most commonly grown. It accounts for the majority of cocoa beans in circulation worldwide (between 70 and 75 percent of total production). The pod's hues run the gamut from crimson to yellow. The bean-producing tree is substantially more resistive to disease than other varieties and produces beans that are inferior in flavour, astringent in taste and low quality.

In addition to promoting fat burning in the body, enhancing intestinal

contraction, preventing tumour development (anti-cancerous), preventing bronchial asthma, improving healthy brain functioning and preventing memory loss, cacao beans contain useful phytochemicals (amnesia or alzheimer). Additionally, it contains advantageous amino acids including glutamine, arginine and leucine, which can speed up human wound and cut healing. Due to the presence of stimulants "Theobromine" and "Caffeine" in minute amounts, regular consumption of cocoa is healthy for the heart and skin, can lessen extreme muscular exhaustion and can eliminate moodiness [3].

Before science could confirm its possible health benefits, chocolate was used as a delicacy, aphrodisiac and a folk remedy for many years. Polyphenols, which serve as antioxidants and have possible anti-inflammatory, cardioprotective, antihepatotoxic, antibacterial, antiviral, antiallergenic and anticarcinogenic qualities, are the main components of cocoa and chocolate that benefit human health. The impact of cocoa and chocolate on human health is briefly discussed in this study, along with a brief review of the scientific literature on cocoa polyphenols. Even while there is now a lot of study on the possible health advantages of dark chocolate and cocoa, there are still many unanswered questions and several hotly debated topics. It is clear that additional research is required in this area before it can be said with certainty that chocolate has a negative impact on health [4].

Chocolate is a food that is typically enjoyed for pleasure but has recently been reevaluated as a source of beneficial ingredients because of its distinctive structure and flavour. Flavanols, a type of polyphenol found in high concentrations in chocolate, have anti-inflammatory and antioxidant characteristics that help protect against degenerative diseases. By influencing bitterness and astringency, procyanidin and flavanol polymers also contribute to the flavour of chocolate. Numerous factors, some linked to the raw material and others to processing, affect the polyphenol concentration of chocolate.

The large and diverse group of biologically active secondary metabolites known as polyphenols is found in plants where it serves as a support material for cell walls, a colourful attractant for birds and insects and a defence mechanism against various environmental stresses like wounding, infection, excessive light, or UV radiation. They are categorised into four families, phenolic acids, lignans (known as phytoestrogens; flaxseed and flaxseed oil are the main sources), flavonoids (the most prevalent polyphenols in human diets) and stilbenes, based on a number of phenolic rings and the structural elements that bind these rings (resveratrol is under investigation for its anticarcinogenic properties). Anthocyanins, flavonols, flavanols (catechins in tea, red wine and chocolate), flavanones.

The process of manufacturing chocolate involves several steps. Yeast and bacteria remove the mucilaginous pulp from the cocoa fruit during fermentation, which is an important phase in the production of the chocolate

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flavour because it generates fragrance precursors, leaving behind roughly 30 to 40 seeds in each cocoa fruit after harvest. After fermentation, the water content must be dried to a level of 5–7%, which guarantees product stability before further processing. Then, to enhance the chocolate flavour, dried cocoa beans or nibs (i.e., beans without the outer shell) are roasted. The process of processing cocoa continues by grinding the solid nibs into a paste (liquor) [5].

Conclusion

In general, the chemical make-up of polyphenols, food matrix, aspects of food processing, interactions with other dietary components and some host-related factors (individual genetics, gender, age, disorders and physiological state, as well as microbiota metabolism and enzyme activity in the colon) all affect polyphenol bioavailability. Vegetables and fruits, green and black tea, red wine, coffee, chocolate, olives, some herbs and spices, nuts and algae are the main nutritional sources of polyphenols. Additionally, some polyphenols are unique to certain foods, while others are present in all plant products; so generally speaking, food is thought to include complex combinations of polyphenols.

Acknowledgement

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Conflict of Interest

There are no conflicts of interest by author.

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