

Cocoa Alternatives in the Production of Chocolate

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Abstract

Chocolate is a luxury food product made from the cocoa bean (*Theobroma cacao* L) loved by millions of consumers all over the world, nevertheless, the environmental impact and child labour issues related to cocoa production remain a concern and it is anticipated to fuel the demand for fair-traded cocoa. There is also an increasing demand for speciality chocolate products which supports innovation and research development for alternative chocolate. The trend for speciality chocolate products is expected to increase demand because consumers have concerns over allergies to specific components. The movement for clean-label and organic products that bring health benefits has increased the demand for dark and sugar-free chocolates. Furthermore, cocoa contains methylxanthine alkaloids including theobromine (2% to 4%), and caffeine (0.2%) which are psychoactive compounds. Depending on the doses, it can also trigger increased heart rate, negative mood, sweating, trembling, severe headache, nausea, and anxiety. Moreover, there is a global decrease in the production of cocoa as a result of crop failure, diseases and ageing plantations. Consequently, fluctuation in prices, and issues highlighted above serve as a noble call for the cocoa industry to find cocoa alternatives. Some odour-active compounds found in cocoa beans such as alcohols, carboxylic acids, aldehydes, ketones, esters and pyrazines interact during post-harvest processing to give rise to cocoa flavour. The odour-active compounds are the main contributor to the chocolate aroma. Legumes and other plants such as red oak, carob and British barley having similar odour-active compounds and may be used as alternatives for cocoa. Furthermore, legumes and other plants, free from theobromine and caffeine, like carob, give an additional advantage over cocoa. This review gives a brief idea of cocoa and post-harvest processing of cocoa and other plants that can be used as cocoa alternatives based on the similarity of their composition compared to cocoa odour-active compounds.