

Секция 3

Инновационные решения при производстве продуктов питания из растительного сырья

THE TRUTH ABOUT RUBY CHOCOLATE

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Abstract. The article is devoted to the review of Ruby Chocolate, an innovative product, a unique type of chocolate with a pink colour and fruity taste, developed by the Belgian company Barry Callebaut in 2017. The main characteristics, origin, composition, production technology, taste and colour qualities of ruby chocolate are considered in the article. The article also includes the analysis of market trends and the opinions of experts on the purity of ruby chocolate.

Keywords: ruby chocolate, cocoa beans, professional chocolate experts, berry flavour, acidity

Chocolate is a popular product around the world. It is made from cocoa beans, sugar and milk. It is a favourite treat for many people, it is also used in a variety of desserts and recipes. Chocolate also has a number of positive effects. It increases serotonin levels in the brain, improving mood and reducing stress levels, increases a person's ability to work, reduces the risk of cardiovascular problems as well as promotes bone health and osteoporosis risk [4]. Most people are well informed about three types of chocolate: white, milk and dark chocolate [5]. White chocolate contains no cocoa beans, just cocoa butter, sugar and milk. It has a sweet and creamy taste. Milk chocolate is made from cocoa beans, sugar and milk. It has a smooth and sweet flavour. Dark chocolate contains a higher percentage of cocoa beans and has a bitter flavour [5]. Recently, however, a new type of chocolate has emerged along with these types of chocolate - ruby chocolate. After white, milk and dark chocolate, ruby chocolate is considered the most unusual discovery of the last 80 years.

The story of this chocolate goes back to the beginning of the 21st century when Barry Callebaut discovered that some cocoa beans harvested in Brazil, Ecuador and the Ivory Coast had different sensory characteristics [1]. They were lighter in colour and had a different chemical composition, even though they grew on the same trees as the classic cocoa beans. It is still not known how different cocoa beans could have grown on the same tree, but there are versions that it could be genetic mutations or peculiarities of the cocoa beans origin. In 2017, Belgian chocolate maker Barry

Callebaut unveiled four varieties of chocolate in China [5]. Chocolate experts flew from all over the world to see and taste the unusual product. According to the manufacturer, the chocolate is made without adding any colouring or fruit flavourings. It owes its colour and unique taste to certain basic substances found in cocoa beans. The company has spent more than 10 years working with Jacobs University in Germany to unlock all the secrets of the cocoa bean and find the best way to process it to create a new kind of chocolate.

The taste of ruby chocolate is described by professional experts as a semi-sweet white chocolate with raspberry and citrusy notes. According to Fayard, chef at the Chicago Academy, «it is very different from any other chocolate in the world; it has a fruity, berry-like taste with typical fresh sour notes. The taste itself comes from the cocoa beans selected to make this chocolate type. Delicate processing of the beans preserves the typical sour flavours». Also, people who have managed to taste this type of chocolate note that it has almost no characteristic cocoa flavour [10]. The main ingredients of ruby chocolate are known to be cocoa beans, cocoa butter and milk. However, along with sweetness, creamy and berry flavour of the chocolate, acidity is reported to be one of the prominent sensory characteristics of ruby chocolate[1].

When experts comparing the phenolic content, this chocolate has been rated between white and milk chocolate[3]. Rich texture of the ruby chocolate makes it suitable for preparation of desserts like candies, mousses, ganaches, cupcakes etc. Recently, the best combinations of ruby chocolate with different products have been identified: tea, coffee, citrus fruits, blue cheese, pink champagne, salted caramel and spices. The flavour is described by Callebaut itself as «not bitter, milky or sweet with a berry flavor»[5]. Although the exact method of making the chocolate is a mystery, some experts suppose that ruby chocolate is made from unfermented Brazilian cocoa beans, which may have a naturally pink colour[2]. Barry Callebaut filed a European patent in 2009 for a «process for producing red or purple cocoa beans»[5]. This patent describes a method for processing unfermented or semi-fermented cocoa beans with a higher polyphenol content and the addition of an acid such as phosphoric, lactic, citric, ascorbic or acetic acid [2,3]. In addition, the cocoa for ruby chocolate is degreased with petroleum ether. Fayard mentioned that «the preparation process is very similar to that of the better-known chocolates (milk, dark, etc.) with the exception of its crystallization curve». For any chocolate to be shiny with a crispy crust, it must be tempered. Ruby chocolate is tempered as follows: it is heated to 40 °C so that the cocoa butter melts evenly. It is then cooled to around 28°C, the temperature at which the chocolate begins to crystallise, stabilising the fat. It is then heated again, but this time to 30 °C and processed [1]. The chocolate becomes smooth and crispy as it solidifies.

The first mass sales of ruby chocolate began in Japan in 2018 in the form of ruby chocolate Kit Kat bars. Sales were very good and other confectionery companies were subsequently released ruby chocolate products. Lucerne-based confectionery company Bachmann launched several ruby chocolate products, including pure bars in May 2018, Costa Coffee launched Ruby Hot Chocolate made with ruby cocoa in January 2020, and Starbucks offered a Ruby Flamingo Frappuccino as of 2020[5]. Ruby chocolate was launched in Russia in 2019. The first product with ruby chocolate added was Chistaya Liniya ice cream.

Unfortunately, some people argue that there are four types of chocolate. Some chocolate experts believe that ruby chocolate is a new marketing ploy to attract the public as there is now a trend for spectacular and colourful food[7]. Fat-soluble colouring and flavouring agents are used in the production of ruby chocolate.

Larisa Ryseva, a candidate in technical sciences and head of the chocolate production laboratory at the All-Russian Research Institute of the Confectionery Industry has been working with chocolate all her life, she has travelled to various cocoa bean plantations and has never seen red, scarlet or pink fruit. But the production techniques are improving every year, so pink chocolate is supposed to be a hue of colouring and flavouring and such a product can hardly be called chocolate according to the law. After all, cocoa only acquires a «chocolate» flavour and aroma when it is roasted, and the fruit must be absolutely «ripe». Of course, the roasting of cocoa beans is very important as it determines the taste, colour and aroma of the future chocolate. Normally, during the heat treatment, the beans lose some of their moisture and their colour becomes dark brown with a characteristic smell. So, how does chocolate get pink without using chemicals? Vitaly Alenkin, a curator of the collection of tropical plants at the Moscow State University's Botanical Garden «Aptekarsky Ogorod» expresses strikingly different view about the uniqueness of ruby chocolate. Cocoa beans are suggested to be picked unripe and fermented for a short time or simply dried and «alternatively they can be extracted to add a pink colour to existing chocolate». This opinion is more likely to be true than anything else, as it explains the patent taken by Barry Callebaut mentioned earlier.

Angus Kennedy's statement is the opinion that casts doubt on the naturalness of chocolate [6]. He is not sure it is the fourth type of chocolate along with white, dark and milk. According to «Business Insider», there are chocolate makers in Peru who have been making this kind of pink chocolate for years. He claims that it has a different colour, but some additives are used in the composition and the taste of ruby chocolate can be achieved at home by eating white chocolate and raspberries alternately.

Chocolate expert and author Dom Ramsey was also unsure about Ruby's appearance, saying it was hard to evaluate the variety because Barry Callebaut had said little about its ingredients and production process.

In conclusion, I would like to say that after dark, milk and white, ruby is the most uncommon chocolate discovery. Its unusual colour and rare, unique and amazing flavour makes the experience more exciting and inspiring.

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***Аннотация.** Статья посвящена обзору рубинового шоколада, инновационного продукта, уникального шоколада розового цвета с необычным фруктовым вкусом, разработанного бельгийской компанией Barry Callebaut в 2017 году. Основные характеристики, происхождение, состав, цвет и вкусовые качества, а также технология производства рубинового шоколада рассмотрены в статье. В статье также представлен анализ тенденций рынка и мнения экспертов об уникальности рубинового шоколада.*

***Ключевые слова:** рубиновый шоколад, какао бобы, шоколатье, ягодный вкус, кислотность*

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BIOTECHNOLOGICAL PROCESSING OF KABULI CHICKPEA SEEDS BY VARIOUS METHODS FOR USE IN THE FOOD INDUSTRY

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