Ministry of Education and Science of Ukraine

National University of Food Technologies

90th International scientific conference of young scientist and students

"Youth scientific achievements to the 21st century nutrition problem solution"

April, 11-12 2024

Part 2

Kyiv, NUFT, 2024

Міністерство освіти і науки України

Національний університет харчових технологій

90-та Міжнародна наукова конференція молодих учених, аспірантів і студентів

"Наукові здобутки молоді – вирішенню проблем харчування людства у XXI столітті"

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Частина 2

Київ НУХТ 2024

90th International scientific conference of young scientist and students "Youth scientific achievements to the 21st century nutrition problem solution", April, 11–12, 2024. Book of abstract. Part 2. NUFT, Kyiv.

The publication contains materials of 90th International scientific conference of young scientists and students "Youth scientific achievements to the 21st century Nutrition problem solution".

It was considered the problems of improving existing and creating new energy and resource saving technologies for food production based on modern physical and chemical methods, the use of unconventional raw materials, modern technological and energy saving equipment, improve of efficiency of the enterprises, and also the students research work results for improve quality training of future professionals of the food industry.

The publication is intended for young scientists and researchers who are engaged in definite problems in the food science and industry.

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Матеріали 90-ї Міжнародної наукової конференції молодих учених, аспірантів і студентів "Наукові здобутки молоді – вирішенню проблем харчування людства у XXI столітті", 11–12 квітня 2024 р. – Київ: НУХТ, 2024. – Ч.2 – 412 с.

Видання містить матеріали 90-ї Міжнародної наукової конференції молодих учених, аспірантів і студентів "Наукові здобутки молоді – вирішенню проблем харчування людства у XXI столітті".

Розглянуто проблеми удосконалення існуючих та створення нових енерго- та ресурсоощадних технологій для виробництва харчових продуктів на основі сучасних фізико-хімічних методів, використання нетрадиційної сировини, новітнього технологічного та енергозберігаючого обладнання, підвищення ефективності діяльності підприємств, а також результати науково-дослідних робіт студентів з метою підвищення якості підготовки майбутніх фахівців харчової промисловості.

Розраховано на молодих науковців і дослідників, які займаються означеними проблемами у харчовій науці та промисловості.

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2. Anthocyanins in raspberry and their potential health benefits

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Introduction. Anthocyanins are one of the most common plant pigments. Most of the red, blue, and purple-colored vegetables, fruits, especially berries, and flowers contain anthocyanins. It has been proved that these phytochemicals have various beneficial health effects and are potential pharmaceutical ingredients [1, 2].

Material and methods. In this study the analysis of modern scientific literature was conducted. The methods that were used are generalization, systematization, specification.

Results. Anthocyanins are glycosylated forms of anthocyanidins that are a subgroup of flavonoids. Their general molecule structure is shown in Figure 1.

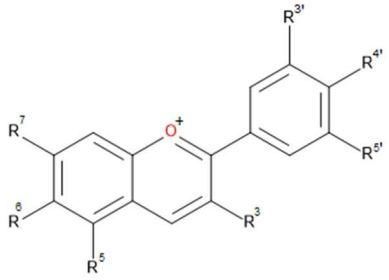

Figure 1 – General anthocyanin structure

Anthocyanins are found mostly in berries, fruits and vegetables and responsible for their red, purple and blue colour. Over 700 unique anthocyanins have been isolated from their natural sources but cyanidin, delphinidin, pelargonidin, peonidin, malvidin and petunidin glycosides are the most common ones. Berries, especially blackcurrants, blackberries, redcurrants, blueberries, bilberries and raspberries contain high levels of these phytochemicals [1].

Red raspberry (*Rubus idaeus* L.) is a widely spread berry in Ukraine. Its unique polyphenol profile is mainly characterized by anthocyanins, the average amount of which is from 200 to 300 mg per 100 g of dry weight. The main anthocyanins contained in red raspberry are cyanidin (22.60 mg/100 g) and pelargonidin (1.60 mg/100 g) glycosides. Its cyanidin derivatives are basically represented by cyanidin-3-sophoroside, cyanidin-3-glucoside and cyanidin-3-rutinoside, the content of which increases as the fruit matures (Figure 2) [1, 3].

Anthocyanins have been widely studied for their beneficial health effects due to their anti-inflammatory, antimicrobial, antidiabetic, anti-obesity and anticancer properties.

Their therapeutic effects on the cardiovascular system are associated with improved lipid profiles and reduced blood pressure that reduce the risk of coronary problems, cardiomyopathies, and ischemia. Some studies indicate that these compounds demonstrate capacity to inhibit various types of cancer, such as human

brain, breast, skin, thyroid, gastric, liver, bladder, colon and renal cancer mainly attributed to their antioxidant activity. Due to their neuroprotective effects anthocyanins help to prevent neurological pathologies, such as Alzheimer and Parkinson's diseases and show neurological improvements in cognition, learning, memory, and verbal fluency. Because of antioxidant, anti-inflammatory and anti-obesity properties they help in treatment of diabetes mellitus. In addition, it has been reported that they can improve vision, stimulate appetite, and protect against various non-communicable diseases [1, 2].

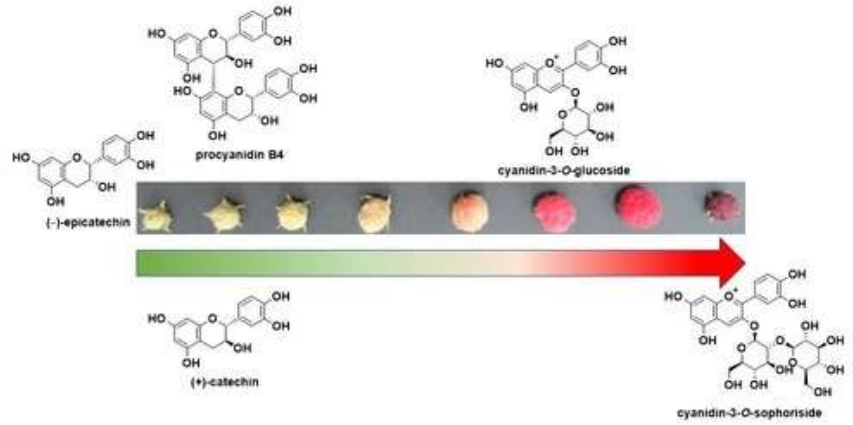

Figure 2 – The content of polyphenolic compounds during raspberry ripening

Conclusions. Anthocyanins are valuable compounds that are present in a variety of vegetables and fruits, the daily intake of which can help to prevent several diseases, which evidence indicates. Therefore, the regular consumption of raspberries that also contain high levels of anthocyanins leads to benefits to human health.

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