

Fresh or Frozen Berry Fruits?

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Editor

Recent studies suggest that diet rich in fruits and vegetables could be associated with reduced risk of coronary hard disease, stroke and even cancer [1]. Both fruits and vegetables are important sources of vitamins (e.g. group of vitamins B and C), minerals and fibers. Berry fruits are considered the healthiest, being also called the “*super fruits*”. They are rich in anthocyanins, catechins, ellagic acid, vitamin C, flavonoids and antioxidants.

Catechins are flavonols that support the antioxidant defense system, while anthocyanins (water-soluble colored pigments that depending on their pH, could have red, blue or purple color) are associated with a low risk of certain cancers, prevent aging, improve memory function and the urinary tract health. Both catechins and anthocyanins have antioxidant properties [2].

Antioxidants are substances that protect the body by neutralizing free radicals or unstable molecules of oxygen that are major sources of disease and aging and can damage the body cells. They reduce the inflammation, neurodegenerative oxidative stress and macular degeneration, improve cardiovascular functions and decrease the risk of cancer.

However, both anthocyanins and catechins are not completely stable, therefore after harvesting, these compounds undergo different transformations during processing and storage, which may alter the biological activity [3]. In general, bioactive polyphenols are easily oxidized by polyphenol oxidase enzymes present in berry fruits (e.g. blueberries). The enzymes convert the polyphenols to the corresponding quinones, which furthermore is rapidly polymerized giving the red, brown or black pigment that cause fruits browning.

Recent studies assessed the storage effect of berry fruits, especially blueberries [4,5]. Although freezing of fruits is considered to be one of the best option for preservation, in the case of blueberries and bilberries there is a high decrease in the concentration of total phenols and anthocyanins after only three months of storage, even at low temperature (-20°C). In addition, there were no significant differences

between fruits deposited at -20°C or -50°C, suggesting that lowering the temperature will not improve the preservation of bioactive compounds, especially the anthocyanins.

As a conclusion, freezing the berry fruits is not enough for anthocyanins to be preserved, since there is a retention of about 50%. On the other hand, no statistically significant loss of total polyphenols was noticed in the first 30 days for frozen fruits, while both anthocyanins and total polyphenols losses were significant at +6°C after less than 15 days (e.g. for total of polyphenols, the retention is about 34%).

Though the berry fruits are considered “*super fruits*” due to their high antioxidant properties, it is recommended to consume them fresh and to avoid processed fruits as much as possible.

The article „Short Period Storage Impact on Bioactive Constituents from Bilberries and Blueberries” published in this issue, present the antioxidant and antibacterial effects of these “*super fruits*” and the content of their specific bioactive compounds.

Conflict of interest

None to declare.

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