

Abstract

The beneficial effect of regular consumption of fruit and vegetables on human health is well known. Increasing the supply of fruit and vegetables can prevent or at least reduce the risk of many chronic non-communicable diseases. This is due to the presence of numerous biologically active substances in these raw materials, including polyphenols, anthocyanins, vitamins, fiber and minerals. In order to be able to compose a correct, enriched and balanced menu, it is necessary to know the individual species in terms of their nutritional value and health-promoting effects.

The fruits of dogwood (*Cornus mas* L.), despite their great taste and health-promoting qualities, are underestimated and rarely used in human nutrition. These fruits contain many minerals, primarily iron, potassium, but also calcium, phosphorus, magnesium, zinc, copper and manganese. They are also a rich source of vitamins, especially vitamin C and beta-carotene. They also include polyphenols, organic acids, pectin, tannins and sugars as well as anthocyanins.

The high content of iron and vitamin C in dogwood fruits predisposes them to be introduced into the diet of people with deficiency anemia, as an auxiliary element in its prevention and treatment. However, dogwood, due to its intense taste and aroma, is a fruit that is difficult to eat on its own, which is why solutions are sought to increase its supply in the diet and various types of preserves and products with its addition are produced, e.g. syrups, liqueurs, jams or sweet pastries with fruit.

The aim of the study was to obtain acceptable-tasting products and food preparations with the addition of dogwood fruit and to assess the effectiveness of nutritional intervention with the use of dogwood juice in the nutrition of women of reproductive age, who are naturally more prone to anemia.

Seven varieties of dogwood fruit (*Cornus mas* L.) were tested: Elegantnyi, Fruchtal, Jeljena, Jolico, Łukjanovskji (Lukyanovsky), Wydubieckji (Vydubecký), Wyszogrodzki (Vyšegorodský). The content of minerals Fe, Mg, Na, K and vitamin C was determined in them. As part of the study of the antioxidant potential, tests of ABTS cation radical quenching and DPPH radical quenching were performed. The amount of anthocyanins was also measured and phenolic compounds and anthocyanins were identified in the Elegantny variety, which was selected for further nutritional research due to the high amount of iron and vitamin

C. Due to the ease of production and the possibility of daily application, a decision was made to administer dogwood in the form of 100% juice to the usual diet of women aged 18-40 and to assess changes in their blood parameters during the intervention. As part of the work, preserves and products in the form of jam, juice and cookies were also developed, which were subjected to organoleptic evaluation.

The obtained results indicate that cornelian cherry fruits are a good source of minerals such as iron, magnesium and potassium. In all analyzed varieties of dogwood, the amount of minerals significantly exceeded the amounts recorded in other popular fruits. The highest amount of vitamin C was found in the dogwood variety Elegantnyj. The other analyzed cultivars had a comparable amount of vitamin C. The harvest date did not affect the amount of vitamin C in the fruits of the presented cultivars.

All varieties of dogwood fruit were characterized by high activity against ABTS•+ cation radical and DPPH• radical. There were no significant differences in the DPPH• radical scavenging capacity between dogwood cultivars. Among phenolic compounds, the largest amount of gallic acid and the lowest amount of coumaric acid was observed in the fruits of dogwood cultivar Elegantnyj. Among the anthocyanins, cyanidin-3-O-galactoside and pelargonidin 3-O-galactoside dominated, while robinobiosides, i.e. cyanidin 3-O-robinobioside and pelargonidin 3-O-robinobioside, were observed in trace amounts.

The processed products obtained as part of the work: juice and jam, as well as products in the form of cookies with the addition of dogwood fruits, in the organoleptic evaluation, obtained an average score corresponding to the level of good quality.

After introducing the Elegantnyj dogwood juice into the women's diet, a significant increase in the number of erythrocytes, hemoglobin and hematocrit, the mean hemoglobin concentration in the MCHC blood cell, the MCV value (mean red blood cell volume) in the blood of women and the RDW value (coefficient of variation of erythrocyte volume distribution) were observed. Daily juice consumption had a significant effect on serum iron levels. In the case of ferritin, the effect of juice was observed as a percentage difference in serum ferritin levels, but no significant changes were noted in relative ferritin concentrations.

Dogwood and products containing it, especially dogwood juice due to its high nutritional value, including high content of iron and vitamin C as well as bioactive properties, can be a good addition to the diet, especially of women of procreative age, who are often found to be deficient in iron and the occurrence of deficiency anemia.