

STUDY ON THE RADICAL SCAVENGING ACTIVITY OF THE BILBERRY FRUITS DRIED BY DIFFERENT WAYS

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Bilberry (*Vaccinium myrtillus* L.) fruits are valuable sources of medicinal and food products. Bilberry polyphenols have demonstrated significant anti-inflammatory, collagen-stabilizing, vasoprotective, anticarcinogenic, antiulcer activities in various experimental models. Radical scavenging activities are very important to prevent the deleterious role of free radicals in different diseases, including cancer. Considering the great importance of bilberries for the pharmaceutical and food industries, an urgent task is to study the phytochemical and pharmacological characteristics of berries, and in particular radical scavenging activity (RSA), depending on the place of their harvesting, methods of storage and drying. The aim of our study was to investigate the RSA in *V. myrtillus* berries dried by different methods. The objects of our research were fully ripe spontaneous *V. myrtillus* berries harvested in August 2018 in Tyachiv district of Zacarpathian region.

Research was carried out in the laboratory of analytical chemistry of Chemistry department of University of Florence. Bilberries were dried by two different ways: using the method of convective drying at a temperature about 60° C and the method of freeze drying at a temperature -57° C. About 125 mg aliquots of dry weight (d.w.) powdered raw material were extracted in a ultrasound water bath within 20 minutes with 5 ml of acetone-water (6:4) mixture. The extract was centrifuged and the supernatant was recovered.

RSA was spectrophotometrically measured, using the 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical. Five different amounts of each extract were added to 5 mL of a 0.1 mM DPPH solution in methanol. The decrease in absorbance at 517 nm was monitored every 30 min up until 360 min of the incubation in the dark when the reaction reached a plateau. For each concentration tested, the reaction kinetics was plotted. The DPPH inhibition percentages obtained were plotted as a function of the corresponding amount of berry (d.w.) in the five samples analyzed and the best equation fitting the experimental points was calculated by the least square method.

According to our research, RSA of convective-dried and freeze-dried bilberries were 202.9 µg DPPH inhibito/mg d.w. and 357.3 µg DPPH inhibito/mg d.w., respectively. So, we can conclude that the drying method has a decisive influence on the RSA of bilberries. RSA of bilberries in convective-dried berries was only 56,8% of the content in the same freeze-dried sample. We can explain this fact by the influence of drying method on the content of thermolability substances, in particular anthocyanins, in bilberries.