UNIVERSITY OF AGRONOMIC SCIENCES AND VETERINARY MEDICINE OF BUCHAREST

Research Center for Studies of Food Quality and Agricultural Products

Scientific and technical report

for the project

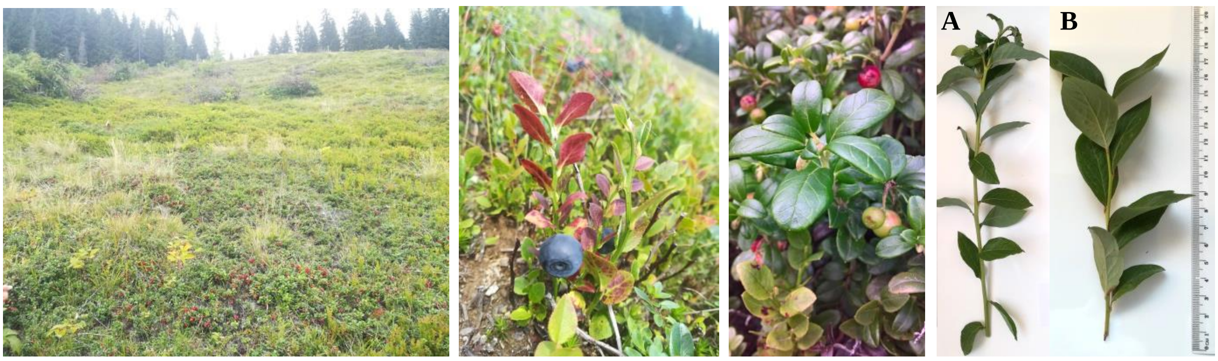
„Natural phenolic systems for dietary lipid protection obtained from shrubs of the genus Vaccinium and their bioaccessibility during the gastrointestinal digestion”

- BIOXVACCINI –

Phase I. Development of new phenolic-based functional food products from different parts of Vaccinium species

Period covered: 31.05.2018 – 14.12.2018

During the Phase I of BIOXVACCINI project, leaves and stems of bilberry and lingonberry will be collected from natural mountain habitats near Borca (Neamt, Romania, coordinate: 47° 11′ 34″ N and 25° 47′ 8″ E) in July and September 2018, while the samples of cultivated *Vaccinium* plants, blueberry (*Vaccinium corymbosum*, Coville and Blueray varieties) were supplied in June 2018 from a pomological collection located in Crovu (Odobești, Dâmbovița).



Borca, Neamț | Afin (*V. myrtillus L.*) | Merișor (*V. vitis-idaea* L.) | Afin: Blueray (A) Coville (B)

Following harvest, the plant material was dried at room temperature and next analyzed for quality parameters like dry matter, moisture, and color. Two different formulations of leaves and stems were developed: powder and extract. Powder was obtained by grinding of the dried material. To obtain phenolic extracts, super/subcritical fluid extraction (SFE) and accelerated solvent extraction (ASE) were developed. Ethanol and CO_2 were used as the extraction solvents. Ethanol is permitted in food industry and easy to eliminate from the extract by evaporation at room temperature. CO_2 has a low critical temperature (31.1 °C), no toxicity and is safe to use. Different experimental conditions will be tested in order to reach the maximum content in phenolic compounds.

Moisture between 35% and 55% were found for all plant materials. In the preliminary test, The optimal extraction conditions were determined in terms of total polyphenols content (mg GAE/g Dry Matter). A temperature of 40 °C, ethanol 50% and an extraction time of 10 min were established to be the optimum conditions for both ASE and SFE extraction methods. The extracts were further fractionated for the separation of procyanidins using Solid Phase Extraction (SPE).

In order to disseminate the results of the BIOXVACCINI project, a web page of the project was developed, developed in both Romanian and English languages: https://www.usamv.ro/index.php/ro/697-bioxvaccini.

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