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Polyphenol antioxidants in American cranberry and their bioavailability in humans

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The American cranberry is a prominent agricultural food crop produced in Massachusetts, Wisconsin, Michigan, Canada, New Jersey, Oregon and Washington. This Native American fruit has a long history of being beneficial for urinary tract infections. Recent studies have further indicated that cranberry fruits possess anti-bacterial, anti-cancer and anti-cardiovascular diseases properties among other beneficial effects. The phenolic compounds are believed to be the principal components responsible for these health effects of cranberry although the specific bioactive ingredients in vivo are unknown. In this presentation, the speaker will first report on the progress on the separation, identification and quantification of phenolic antioxidants in American cranberry using HPLC, HPLC-MS GC and GC-MS techniques, then further discuss the antioxidant, free-radical scavenger and anticancer capacity of phenolic compounds and final focus on the absorption and subsequent distribution, metabolism and excretion of phenolic antioxidants in human body.

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Breeding programs and new cultivars of small fruit crops released in Poland

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In Poland, strawberries, blackcurrants, raspberries, gooseberries and blueberries are important small fruit crops which are grown on commercial plantations as well as in home gardens. The applied breeding programs of small fruit crops are conducted at the Research Institute of Horticulture (formerly Research Institute of Pomology and Floriculture) in Skierniewice, Poland. The breeding of these species (apart from blueberry) has a long tradition in Poland. The main aims and directions include breeding for resistance to pests and diseases, breeding for high yield and fruit quality and suitability for fresh market and processing. Additionally, good adaptation to the polish climate and soil conditions and cultivation technology (including machine fruit harvesting) is required. Traditional hybridization methods are used in the breeding workinvolving the optimal selection of parental forms for crossing with the highest breeding values, an effective use of the genotypes of donors with desired traits and choice of the breeding method. Crossing programs are made annually on plants grown in a high plastic tunnel. From obtained seeds the F1 seedling populations are produced in the glasshouse conditions. Then seedlings are planted in the field for their evaluation and selection of the best individuals and clones. The traditional breeding has recently been supported by the molecular biology including DNA fingerprinting and polymorphism of genotypes and marker assisted selection (MAS). The breeding work has resulted in the release of several valuable cultivars of each crop. So far, new cultivars of strawberry, raspberry, blackcurrant and gooseberry have been released and described in the literature and professional magazines. Most of them are implemented into the commercial production in Poland and other countries.

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