

**Aronia berry tea as antioxidant functional drink: Bioactive phenolic by HPLC-DAD and LC-ESI/TOFF-mass spectrometry**Ozlem Tokusoglu<sup>1,2</sup><sup>1</sup>Celal Bayar University, Turkey<sup>2</sup>Dokuz Eylul University Technology Development Zone, Turkey

The consumption of low levels of antioxidants in the form of fruit and vegetables has been shown to more than double the incidence of certain cancers. Tea is popular beverage and currently, herbal infusions based on dried fruit products have gained in popularity because of their fragrance, fruity flavor, lower amounts of caffeine and low astringent and bitter taste. Chemical composition and biological activity of berries and their products have been widely reported but there are limited works dealing with berry fruit teas. Powder forms of berries and industrial ice-cream form of berries are also utilized as functional food products for nutrition. The genus *Aronia* (Rosaceae family) includes two species of shrubs, native to eastern North America and Eastern Canada: *Aronia melanocarpa* (Michx.) Ell. known as black chokeberry and *Aronia arbutifolia* (L.) Pers. (red chokeberry). The *Aronia* berries contain high levels of flavonoids, mostly proanthocyanidins and anthocyanins and *in vitro* and *in vivo* studies indicate that the berries may have potential health benefits, e.g. hepato protective effects, cardioprotective effects, anti-diabetes effect and anticancer effects on selected CA cells. *Aronia* berry [*Aronia melanocarpa* (Michx.)] (black chokeberry) was harvested at Yalova Research Institute, Yalova, Turkey. After harvesting, the content of total polyphenols of fresh *Aronia* berry was 1012.67±34.62 mg GAE/100 ml (n=3) and the monomeric anthocyanin level was 425.65±3.65 mg/100 ml (n=3). In our current research, *Aronia* based new products including *Aronia* berry teas (as decoction and infusion types), *Aronia* powder and *Aronia* ice-cream were developed by Dokuz Eylul University Technology Development Zone Depark Technopark Spil Innova LLC, Izmir Project. *Aronia* berry (black chokeberry) fruit teas was found as valuable source of flavonoids and anthocyanins compared to the most of commonly consumed berry teas. In manufacturing, decoction method was applied by boiling of *Aronia* berry material in a non-aluminum pot during 8 min until up to two-thirds of the water was evaporated and was strained by home-made tea strain apparatus. Total concentration of phenolics for decoction was evaluated by Folin-Ciocalteu method at 765 nm of absorbance and total phenolics was found as 87.72±0.83 mg GAE/100 ml (n=3) whereas total anthocyanin content was measured according to European Pharmacopoeia 6.0 method with slight modifications. The percentage content of anthocyanins, expressed as cyanidin-3-glucoside chloride was calculated from the expression:  $A \times 5000/718 \times m$  (A=absorbance at 528 m; 718=specific absorbance of cyanidin-3-glucoside chloride at 528 nm; m=mass of the tea to be examined in grams) and was found as 8.87±0.03 mg/100 ml (n=3). In the study, *Aronia* tea infusion was also carried out. Infusion means achieving a desired taste and aroma results of *Aronia* berry by dissolving a certain proportion of the tea materials into water. This application was performed by using a certain combination of teaware, steeping process, water temperature, water to *Aronia* berry tea ratio. The total phenolics and the anthocyanin level of infusion was determined as 101.02±0.55 mg GAE/100 ml (n=3) and 9.05±0.05 mg/100 ml (n=3), respectively. For *Aronia* (chokeberry) powder production, *Aronia* berries were subjected to Freeze Drying (FD) and spray drying process (B-290, Buchi Labour Technik, AG, Flawil, Switzerland) based on our determined conditions; the content of total polyphenols in *Aronia* powder product was 444.72±4.33 mg GAE/100 ml (n=3) whereas, the anthocyanin level of powder was 151.30±1.53 mg/100 ml (n=3). *Aronia* berry based new nutritive food products could be utilized in functional food industry as valuable antioxidant sources and could be evaluated as innovative foods.

**Biography**

Ozlem Tokusoglu has completed her PhD from Ege University Engineering Faculty, Dept of Food Engineering. She is currently working as Associate Professor as a Faculty Member at Engineering Faculty Department of Food Engineering, Celal Bayar University. She is also a Visiting Scholar at the Food Science and Nutrition Department/University of Florida, Gainesville-Florida-USA during 1999-2000 and as Visiting Professor at the School of Food Science, Washington State University, Pullman, Washington, USA. She has published many papers in peer reviewed journals and serving as an Editorial Board Member Of selected journals.