

## Isolation of phenolic compounds from *Aronia melanocarpa* by countercurrent chromatography

Tuba Esatbeyoglu<sup>1,2</sup>, Miriam Rodríguez-Werner<sup>2</sup>, Peter Winterhalter<sup>2</sup>

<sup>1</sup> Max Rubner-Institut, Department of Safety and Quality of Fruit and Vegetables, Haid-und-Neu-Strasse 9, 76131 Karlsruhe, Germany

<sup>2</sup> Institute of Food Chemistry, Technische Universität Braunschweig, Schleinitzstrasse 20, 38106 Braunschweig, Germany

*Keywords: chokeberry, membrane chromatography*

*Aronia melanocarpa* is known for its high content of phenolic compounds, i.e., polymeric procyanidins, anthocyanins, hydroxycinnamic acids and quercetin-glycosides that have numerous health benefits (1). The fractionation of these polyphenols from juice or pomace was done by low-speed rotary countercurrent chromatography (LSRCCC) and high-speed countercurrent chromatography (HSCCC) for large or preparative scale. Afterwards, the obtained fractions were analyzed by HPLC-PDA and HPLC-ESI-MS<sup>n</sup> and the purification of isolated polyphenols was done by preparative HPLC. Structure elucidation of various polyphenols, e.g. Anthocyanins, phenolic acids and quercetin-glycosides, were done by <sup>1</sup>H- as well as <sup>13</sup>C-NMR spectroscopy. Figure 1 shows the workflow of the isolation of phenolic compounds from *A. melanocarpa*. Furthermore, various minor compounds, e.g., chlorogenic acids, isorhamnetin-, apigenin-, luteolin- and taxifolin-derivatives, were enriched on a large scale by LSRCCC separation and were identified for *A. melanocarpa*, by UV-spectra, retention time, HPLC-ESI-MS<sup>n</sup> and literature data, for the first time (2).

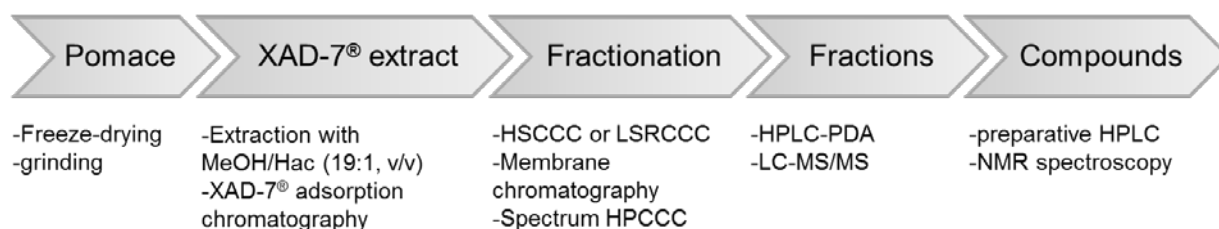


Figure 1: Workflow of the isolation of phenolic compounds from *A. melanocarpa*.

The fractionation of phenolic compounds from *A. melanocarpa* was also carried out on a large scale with membrane chromatography. Additionally, the improvement of the separation of the anthocyanin fraction, which was obtained from membrane chromatography, by HPCCC in a considerably reduced time (90 min) compared to the HSCCC separation (6 h) with less solvent consumption was carried out (2).

### References

1. Kulling SE, Rawel HM (2008) Chokeberry (*Aronia melanocarpa*)—a review on the characteristic components and potential health effects. *Planta Med* 74:1625–1634.
2. Esatbeyoglu T, Rodríguez-Werner M, Winterhalter P (2017) Fractionation and isolation of polyphenols from *Aronia melanocarpa* by countercurrent and membrane chromatography. *Eur Food Res Technol* 243 (7): 1261–1275