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ANTIOXIDANT, ANTIMICROBIAL AND NEUTROPHIL-MODULATING ACTIVITIES OF BLACK CHOKEBERRY (*ARONIA MELANOCARPA*) POLYPHENOLS

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Aronia melanocarpa is extremely rich source of polyphenols rendering in one of the highest *in vitro* antioxidant activities among fruit. In our previous study, it was observed that chokeberry extract has strong antimicrobial effects against chosen foodborne pathogens and significantly inhibited the reactive oxygen species production from OZP-activated phagocytes [1]. In order to reveal which components are responsible for the observed effects, in the current study we investigated the antioxidant, antimicrobial and neutrophil-modulating activities of the major polyphenol components from *Aronia* berries: isolated proanthocyanidins, anthocyanins, hydroxycinnamic acids and purified polyphenol extract. Via the used methods (ORAC, TRAP and HORAC), it was observed that anthocyanins (cyanidin-3-glucoside and cyanidin-3-galactoside) have the highest antioxidant activity. Similarly, cyanidin-3-galactoside expressed the highest potential to inhibit the chemiluminescence response of OZP-activated human neutrophils while the effect on PMA-activated cells was less profound. On the other hand, none of the studied components affected the spontaneous production of reactive oxygen species in human neutrophils. The antimicrobial activity test against 12 pathogenes revealed that chokeberry proanthocyanidins are the most potent antimicrobial agents in the fruit.

The lowest minimum inhibition concentration for proanthocyanidins (0.156 mg/ml) was established against *Proteus vulgaris* G, whereas 0.312 mg/ml proanthocyanidins completely inhibited *Staphylococcus aureus* ATSS 25923.

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References:

[1] Denev et al. (2014) Food Chemistry 157: 37-44.