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## Comparison of free and bound polyphenols profile in a raw and fermented red beetroot

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Red beetroot is rich in a number of phytochemicals, including flavonoids and phenolic acids. These compounds are classified into the non-nutrients group, which perform several functions in plants, among them protective and signaling activities. On the other hand, flavonoids and phenolic acids, due to their strong antioxidant properties, depending on their chemical structure, after ingestion by humans and animals can play a preventive role against a number of diseases including neurodegenerative disorders and cancer. Therefore, to identify their potential benefits on the human body it is important to establish the polyphenols profile in a fresh and naturally fermented red beetroot. The profile and content of flavonoids and phenolic acids in a fresh and fermented red beetroot were analyzed using micro-HPLC-MS/MS method. The content of phenolic acids and flavonoids in raw red beetroot was high and after application a spontaneous process of lactic acid fermentation caused a decrease in the level of these phytochemicals. In the fresh and fermented beetroot nine phenolic acids (chlorogenic, *trans*-cinnamic, ferulic, isoferulic, caffeic, para-coumaric, protocatechuic, sinapic, syringic) and seven flavonoids (apigenin, epicatechin, kaempferol, quercetin, luteolin, orientin, vitexin) were identified. Among phenolic acids the predominant was isoferulic acid while in the group of flavonoids, epicatechin was a main compound. In a fresh red beetroot phenolic acids and flavonoids occurred mainly in bound form, while the fermentation applied caused an increase of free form of these polyphenols. In conclusion, red beetroot is an attractive source of flavonoids and phenolic acids and the fermentation process may significantly increase the amount of available forms of these phytochemicals.

### Biography

Wieslaw Wiczowski has completed his PhD in Food Chemistry and Human Nutrition at the University of Warmia and Mazury, Olsztyn, Poland. His professional interest is connecting with the relation between nutrition, metabolism of bioactive compounds, oxidative stress and health. He has published 39 papers in reputed journals.

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