

UNLOCKING THE ANTIOXIDANT POTENTIAL OF GREEN WASTE THROUGH SOLID-STATE KOMBUCHA FERMENTATION

Taisa Vashkevich¹, Vilma Kaškonienė¹, Audrius Sigitas Maruška¹

¹Instrumental Analysis Open Access Center, Vytautas Magnus University, Lithuania
taisavashkevich@stud.vdu.lt

Radical scavenging species can accumulate in human body, cause oxidation of macromolecules, which can potentially lead to the development of cancer and cardiovascular diseases [1]. To counteract the effect of radical scavenging species, plants produce phenolic, carotenoid, chlorophyll, and flavonoid compounds, which can also have anti-cancer and anti-inflammatory properties [2,3]. The aim was to analyze and compare total content of antioxidant compounds in selected plant materials, with particular focus on underutilized green waste which is discarded instead of repurposing for extraction of phytochemicals: red radish leaves belonging to *Raphanus* genus, strawberry (*Fragaria × ananassa*) calyxes, and Scottish thistle (*Onopordum acanthium*) flowers and leaves. The novelty of this research lies in analyzing these compounds both before and after solid-state kombucha fermentation with spectrophotometric methods, as fermentation can enhance phytochemical bioavailability [4]. Results showed that strawberry calyxes contained the highest phenolic and flavonoid contents, with an increase of approximately 45.2% and 19.0% after fermentation, respectively, as well as the highest antioxidant capacity (DPPH assay) pre- and post-fermentation (127.31 and 82.18 mg/g, expressed as rutin equivalents), while interestingly exhibiting anti-inflammatory properties only after the fermentation. Red radish leaves exhibited the highest carotenoid (2.77 mg/g) and chlorophyll a and b (3.27 and 2.18 mg/g) concentrations.

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