

Evaluation of total phenolic content and antioxidant activities from different type of extraction technique of *Helianthus tuberosus*

ABSTRACT

This study investigated the difference of antioxidants activity from different extraction techniques of Jerusalem artichoke (*Helianthus tuberosus*). Three different extraction techniques involved were aqueous extraction, high-pressure steam extraction and 70% ethanol extraction. Total phenolic content (TPC) was determined using the Folin-Ciocalteu method. The antioxidant activities were analysed using ferric reducing antioxidant power (FRAP) and 2,2-diphenyl-1-picrylhydrazyl (DPPH). The high-pressure steam extract showed the highest total phenolic content and both FRAP and DPPH activities at 127.87 ± 0.08 mg GAE/g, 53.38 ± 2.76 mg AAE/g and 79.92 ± 0.26 mg AAE/g. Meanwhile, the aqueous extract showed 2-fold higher of total phenolic content compared to ethanol extract at 65.73 ± 9.44 and 30.61 ± 0.00 mg GAE/g. Conversely, antioxidant activities obtained from ethanol extracts (41.49 ± 2.54 and 41.10 ± 0.10 mg AAE/g.) were higher compared to aqueous extract (23.29 ± 0.47 and 5.24 ± 0.38 mg AAE/g.). This study suggests that different extraction methods influenced the findings of total phenolic content and antioxidant activities of the Jerusalem artichoke. Hence, Jerusalem artichoke can be considered as a potential source of natural antioxidants.

Keyword: Aqueous extraction; Autoclave-assisted extraction; Ethanol extraction; FRAP; DPPH