



Scottish Section Meeting, 21–22 March 2016, Phytochemicals and health: new perspectives on plant based nutrition

Study into the polyphenol content and antioxidant activity of rapeseed pomace extracts

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This abstract was awarded the student prize.

Rapeseed pomace (RSP) is a waste product obtained after edible oil production from *Brassica napus*¹. This study aimed to determine the polyphenol content, radical scavenging activity, ferric iron reducing antioxidant power and the oxygen-radical absorbance capacity assay, of RSP extracts, with regard to their potential application in the treatment or prevention of neurodegenerative diseases². High performance liquid chromatography/mass spectrometry was applied to determine ubiquitous polyphenolic compounds³.

Three different extraction methods (Soxhlet-, ultra sonic assisted- and accelerated solvent extractions) were applied on 2 harvest years (2012, 2014). From the extracts obtained, the total phenolic content (Folin–Ciocalteu assay) was found to be between 5.54 (SD 0.28) and 2.48 (SD 0.06) gallic acid equivalents/100 mg dry weight. The ferric iron reducing antioxidant power (FRAP assay) is ranging from 0.834 (SD 0.01) to 0.34 (SD 0.01) Trolox equivalents/100µg. The IC₅₀ values for the radical scavenging (DPPH) assay were found to be between 49.23 (SD 14.00) and 180.30 (SD 16.16) µg/mL. Liquid chromatography-mass spectrometry of the RSP extracts showed substantial presence of several phenolic compounds, the most abundant one being sinapic acid (7496.7 (SD 198.9) – 1923.3 (SD 18.4) mg/kg). Significant differences (2-way ANOVA, p < 0.0001) were found between the 3 different extraction techniques for all the tested antioxidant properties. The strong antioxidant properties demonstrated by the RSP extracts in this study warrants further investigation for their potential use in the treatment or prevention of oxidative stress related diseases.

This work was supported financially by the Moulton Barrett Scholarship from TENOVUS Scotland and Macintosh of Glendaveny by providing the rapeseed pomace.

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