P-252 - BREWER'S SPENT GRAIN AS A POTENTIAL SOURCE OF ANTIOXIDANTS: CHARACTERIZATION OF EXTRACTS

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Background

Brewer's spent grain (BSG) is one of the most abundant by-product of the brewing industry. While currently used as animal feed, BSG has some components with nutritional and functional (e.g. dietary fiber, protein and phenolics) potential which makes it an interesting source for added-value compounds/products to be incorporated into foodstuffs or cosmetic products.
Antioxidant compounds can help maintain the oxidative homeostasis and therefore they are thought to play an important role in the prevention of degenerative diseases. Moreover, from a technological standpoint they may aid preventing product oxidation and, consequently, extend the shelf life of products.
Considering the above made arguments, the present work aims to produce BSG extract's and characterize their antioxidant capacity.

Method

BSG was extracted using hydroethanolic extracts (Solid Liquid Extraction) and the resulting extracts antioxidant capacity was measured through ABTS and DPPH radical's inhibition as well as through DNA agarose gel electrophoresis.

Results & Conclusions

The results showed that the different extracts were capable of inhibiting ABTS and DPPH radicals. Moreover, of the different water:ethanol ratios, 60 % (v/v) ethanol appeared to be the fraction with the highest antioxidant capacity while the extractions performed using only water or ethanol exhibited significantly lower values.
Interestingly, when considering the capacity to protect DNA from H_2O_2 induced damage, all of the extracts exhibited a strong activity, with concentrations as low as 20 µL of extract/mL, being able to fully prevent DNA cleavage. Similar results were observed when considering an H_2O_2 iron cation system. However, in this case, 100% ethanol and 100% water extracts were not always 100% effective in inhibiting DNA degradation. In fact, for both, concentrations above 200 µL of extract/mL appeared to loose their effectiveness registering up to ca. 40% DNA degradation for ethanol and 15% DNA degradation for water. Overall, none of the extracts (at the tested concentrations) led to the cleavage of the DNA molecule, regardless of the presence of iron cations, and therefore had no pro-oxidant activity.
In sum, BSG extracts' possess an interesting antioxidant activity that appears to possess some biological relevance and represents an interesting source of antioxidant compounds to be exploited.

References & Acknowledgments

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