SUBMISSION GUIDELINES - POSTGRADUATE COMPETITIONS 2021

The Nutrition Society Postgraduate Competitions offer current members of the Nutrition Society registered for a Higher Degree the opportunity to present a short review paper on their research topic at the Irish Section Conference or the Annual Summer Conference.

Winning entries will also have their paper published as a symposium paper in the Proceedings of the Nutrition Society.

The Postgraduate Competition is open to all current members of the Nutrition Society registered for a Higher Degree and applicants must be studying at the time of application.

Review of Postgraduate Competition entries

Entries in the Postgraduate Competition will be examined by a scientific and editorial panel and up to four winners will be chosen for presentation at the Postgraduate Symposium held at the Irish Section Conference and at the Annual Summer Conference.

In making its decision, the selection panel will consider the quality of the submission in terms of its relevance to nutritional science, the substance of its results, and its originality.

Please read the following checklist and make sure that your abstract complies as it is likely to be rejected for any of these following reasons:
1. Clear scope
2. Sufficient detail of authors own work
3. Sufficient data/results (normally drawn from previously published work; see previous note above*)
4. References (where appropriate)
5. Objective/background/ conclusions/discussion
6. The proposed review must not have been submitted for publication or published elsewhere 7. Follows layout instructions (below)

Instructions to authors for preparation of abstracts

Size: The text and any figures or tables must be within an image area with the following margins: Right: 2.54 cm; Left: 2.54 cm. The Top and Bottom margins are flexible, but the abstract must fit on one sheet of A4 paper. Tables and figures should fit within the right and left margins as indicated above. Abstracts exceeding these dimensions will be rejected.

Typeface: The font or typeface should be Times New Roman 12 point. Within tables and the reference list the same typestyle should be used but the pitch should be reduced to 10 point.

Title: Type in bold type, beginning in the first space on line 1. Use an initial capital letter only for the first word and for proper nouns. Generally, abbreviations should not be used in the title.

Authors: Do not leave a blank line between the title and the authors' names. The authors' names should be preceded by the word 'By'. Type authors' names using lower case except for initial letters of surnames, giving each author's initials in capitals before the surname. Separate names with commas, except for the last name, which should be preceded by the word 'and'. Terminate the author list with a comma.

Addresses: Leave one-character space between the authors' names and the addresses. Type addresses in italics; use lower case except for initial letters of words. If there is more than one name and address they should be related by superscript numbers; do not place addresses between the names in a list of authors. State the postcode if UK; state the country if not UK.

Text: The text should start at character space 1 on the first line. Subsequent paragraphs should be indented (about 5 mm). Do not leave blank lines between paragraphs. Text should be fully justified (right and left). Do not use subheadings such as Methods, Results and Conclusions in abstracts.

References: References should be presented in the Vancouver style. Within the text, citations should be numbered consecutively in the order in which they first appear in the text using superscript Arabic numerals in parentheses. If a reference is cited more than once the same number should be used each time. The references should be listed in numerical order at the end of the text. The name of the journal should be abbreviated and typed in italics.

Statistics: It is not necessary to give a detailed account of any statistical methods, but some indication should be given of the variability of replicated results and significance of any stated differences.

Publication

Winning postgraduate entries will have their paper published as a symposium paper in the Proceedings of the Nutrition Society. The Publications Team contact winning entrants with further instructions after the selection process has been completed.

Questions?

If you have any queries, please contact the Nutrition Society Events Officer, Carollina Fernandes (c.fernandes@nutritionsociety.org)

Iodine deficiency in the UK: an overlooked cause of impaired neurodevelopment? By S.C. Bath and M.P. Rayman, *University of Surrey, Guildford, Surrey GU2 7XH, UK*

Iodine is required for the production of thyroid hormones, which are needed for correct brain development, particularly during pregnancy and early life. The iodine requirement for a pregnant woman is nearly double that of a non-pregnant woman and it is widely accepted that severe iodine deficiency during pregnancy is associated with brain damage and impaired cognition in the offspring[1]. Although the UK has been considered iodine-sufficient for many years, there is now an increased focus on the risk of iodine deficiency; this results from the publication of a nationwide study in 2011 that revealed mild iodine deficiency in UK schoolgirls[2] , and of localised UK studies showing women of childbearing age to be iodine deficient[3,4]. Iodine deficiency was common in the UK until the 1960s[5] and iodine intake improved, not by the usual practice of an iodised-salt programme, but through the adventitious increase in milk iodine concentration and increased milk intake[5]. Despite a worldwide focus on the elimination of iodine deficiency, iodine is a largely overlooked nutrient in the UK; monitoring of population iodine status has been poor, iodine is not present in all prenatal supplements and women are not given iodine intake advice during pregnancy. This means that iodine intake is entirely dependent on food choice and UK pregnant women are vulnerable to deficiency.

There is a dearth of information on iodine intake and status in the UK, which we have endeavoured to address through a series of studies. We have shown that organic milk has an iodine concentration that is >40 % lower than that of conventional milk[6], a concern given the large contribution of milk to iodine intake and the increasing popularity of organic milk in the UK. In addition, we surveyed iodised salt availability in the south of the UK and found that, in contrast to most other countries, a low percentage (<20 %) of supermarket shoppers in the UK have iodised salt available for purchase and it is considerably more expensive than standard table salt[7]. These factors may help to explain our finding of mild-to- moderate iodine deficiency in a cohort of 100 pregnant women in Surrey[8]; analysis of their FFQ suggested that milk was the most important dietary predictor of iodine status (P<0.01) and that 97 % never or rarely consumed iodised salt. Iodine deficiency was also found in 230 pregnant women recruited in Oxford, supporting our Surrey findings. This situation is now of great concern as the extent of UK iodine deficiency is such that it is associated with adverse effects on neurological development during pregnancy, as evidenced by our finding of a higher risk of low intelligence quotient (OR 1.58 (95 % CI 1.09, 2.29)) and poorer reading accuracy scores (OR 1.83(95 % CI 1.22, 2.74)) in UK children born to iodine- deficient mothers[9], even after adjustment for potential confounders.

Our data suggest that a public health policy is required in the UK to minimise the risk of iodine deficiency and its adverse effects, particularly in pregnancy.

S.C.B. acknowledges PhD studentship funding by the Waterloo Foundation and Wassen International.

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Brewers' spent grain: a valuable by-product of the brewing industry? By A.L. McCarthy[1], Y.C. O'Callaghan[1], A. Connolly[2], C.O. Piggott[2], R.J. FitzGerald[2] and N.M. O'Brien[1], [1]*School of Food and Nutritional Sciences, University College Cork, Cork, Republic of Ireland and* [2]*Department of Life Sciences, University of Limerick, Limerick, Republic of Ireland*

Brewers' spent grain (BSG) is the residual solid fraction of barley malt remaining after wort is produced. With approximately 3.4 ×106 tons BSG produced annually in Europe (data from Eurostat) and current applications limited to animal feed, uses for this waste are highly sought after. BSG has been incorporated into foods such as ready-to-eat snacks(1), bread(2) and frankfurters(3), and was shown to significantly increase protein, fat and dietary fibre contents at levels that do not adversely alter the quality and sensory properties of these foods. Thus, it has been suggested that foods fortified with BSG be considered as functional foods.

The most abundant phenolic acids in BSG are the hydroxycinnamic acids ferulic acid, pcoumaric acid, sinapic acid and caffeic acid(4). These pure phenolic compounds have shown numerous bioactivities: antioxidant(5), anti-apoptotic(6), anti-inflammatory(7) and anti-atherogenic(8). Protein hydrolysates have a number of uses in human nutrition, particularly in sports nutrition, weight-control products and energy drinks, while also having clinical applications for the treatment, for example, of liver disease and Crohn's disease, thus protein hydrolysates from new sources are highly sought after(9).

Literature to date has focused on incorporating whole BSG into foods. However, our study examined the bioactivity of BSG protein hydrolysates, with a specific focus on antioxidant and anti-inflammatory activity. In addition, the effect of BSG phenolic extracts (previously shown to have antioxidative properties(10)) on a range of juices and smoothies is also under investigation. In order to determine the ability of the protein hydrolysates to protect against oxidant-induced DNA damage the comet assay was used. U937 cells were treated for 24h with 0.5% (v/v) protein hydrolysates, followed by exposure to either H_2O_2 or tert-butylhydroperoxide (*t*-BOOH) both of which significantly ($P<0.01$) induced DNA damage, 17.5% and 23.1% tail DNA respectively. There was no protection by any of the protein hydrolysates against DNA damage induced by *t*-BOOH, while one protein hydrolysate significantly protected against H_2O_2-induced DNA damage. It was found that BSG protein hydrolysates do not act as antioxidants as assessed by effects on superoxide dismutase assay, using H_2O_2 to induce oxidative stress. Preliminary data using an ELISA suggest the hydrolysates possess anti-inflammatory properties. Two of the most bioactive BSG phenolic extracts(10) are currently being incorporated into juices and smoothies. Results to date indicate that the phenolic extracts increase the total phenol content and antioxidant activity (by 2-diphenyl-1-picrylhydrazyl radical scavenging assay and the ferricreducing antioxidant power assay, particularly when incorporated into grape juice and cranberry juice.

To conclude, BSG protein hydrolysates are not exhibiting antioxidant activity, but their anti-inflammatory activity shows potential. In addition, bioactive BSG phenolic extracts have the ability to increase the phenolic content and antioxidant activity of fruit juices.

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