Author's response to reviews

Title: The potential role of phytochemicals in wholegrain cereals for the prevention of type-2 diabetes

Authors:

Damien P Belobrajdic (damien.belobrajdic@csiro.au)
Anthony R Bird (tony.bird@csiro.au)

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Author's response to reviews: see over
To the Editor,

I would like to submit a revised version of the manuscript entitled “The potential role of phytochemicals in wholegrain cereals for the prevention of type-2 diabetes” for publication in Nutrition J.

We would like to thank the Reviewers for their insightful and constructive comments. Please find our response to their comments below.

Kind regards,

Dr D Belobrajdic and Dr A Bird.

Reviewer’s report
Title: The potential role of phytochemicals in wholegrain cereals for the prevention of type-2 diabetes

Reviewer 1:
General comments
The paper is well written and easy to follow. It is a review paper on content and bioavailability of phytochemicals in wheat, rye, barley, oats and rice. It evaluates the evidence for whole grain cereals and cereal fractions to increase plasma concentrations of phytochemicals and to reduce oxidative stress and inflammation in humans in a critical way. This is issue is both important and timely. The paper is well reasoned and relatively balanced. The standard of the writing is very good.

Specific comments
• Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
  Page 2, line 66: 3 should be written in letters (three)
  Page 3, line 121: Embro should be embryo?

RESPONSE: Modified as suggested.

• Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)
  Page 4, line 153 and 155: Explain “Superior” and “Roane”. Are they varieties or cultivars?

RESPONSE: Superior and Roane are cultivars. This has been specified in line 152.

How can bound flavonoids be higher than total? This is not clear.

RESPONSE: There was an error in the values for the bound fraction and this has been rectified.

Page 4, line 156: Give more details about the genotypes. (Different genotypes
from all over the world grown at the same site in Europe.) How many?

**RESPONSE:** Further details provided as suggested.

Page 4, line 184-189: Only one reference is used for rye. If it is possible you could add some more.

**RESPONSE:** We could not find any appropriate additional references to add to this section.

Page 5, line 216-217: There is another study on environmental factors to variation in phenolic acids (Fernandez-Orozco et al., 2010, JAFC).

**RESPONSE:** This reference has been included as suggested and this paragraph has been modified accordingly (lines 215-223).

Page 6, line 257: Which whole grains?

**RESPONSE:** The wholegrains wheat, oats and barley are now defined (line 264)

Page 8, line 342: 1 g of avenanthramides seems like a lot. How much oat extract is it?

**RESPONSE:** This sentence has been corrected accordingly (line 349-51); the oat extract was a 1g avenanthramide-enriched mixture which contained 374umol (111 mg) of avenanthramide. This level of avenanthramide is more than 4-fold higher than the level that could be achieved through high intakes of wholegrain oats.

Page 9, line 409: ( is missing in the beginning of the line. It is not clear what you mean with cereal fibre intake (line 408) and total fibre.

**RESPONSE:** This sentence states that cereal fibre, but not total fibre was associated with lower cytokine levels. This suggests a specific effect for cereal fibre that is not present with other dietary sources of fibre (eg vegetable).

Page 20, table 1: Avenanthramides in oats are missing. Maybe also lignans?

**RESPONSE:** Avenanthramides have been added to table 1 as they are discussed (lines 349-51). However, lignans have not been discussed in this review as their level in cereals is low compared to some seeds and vegetables and they are extensively metabolised, therefore an influence on antioxidant activities in vivo is highly unlikely and there is no evidence for this in vivo.

**Reviewer 2**

The manuscript is generally well written and well researched. My only slight comment is when discussing the various cereal origins of fibres and phytochemicals the authors should include wheat (arabinoxylan and other
material) and also should include other ancient grains and possibly Pseudo cereals (their effects in digestion and perhaps how processing affects their impact). This is important as they are increasingly part of the wholegrain debate.

RESPONSE: In the section entitled “Mechanisms by which wholegrains might protect against type-2 diabetes” we discuss the contribution of soluble fibre and insoluble fibre in protecting against T2D. In an attempt to keep this section concise we did not discuss the contribution of further sub-types of dietary fibre to preventing T2D. Additionally, for the sake of brevity, we only focused on the major wholegrain cereals consumed globally, and did not include pseudocereals or other less commonly consumed cereals.