

A Mini Review on Biomarkers of Whole Grain Barley and Whole Grain Wheat Intake

Tu Hu

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Abstract

1 Introduction

Whole grains (WGs) and their processed food could have health beneficial effects. However, epidemiologic studies showed mixed results due to subjective self-report based food exposure measurement[1]. Using biomarkers of food intake (BFIs) can potentially measure food exposure in population more objectively with accuracy and detail[2].

Alkylresorcinols (ARs) and their metabolites were widely reported and validated biomarkers for WGs intake. In plants commonly consumed for food, ARs only present in high amounts in rye and wheat, especially concentrated in their bran parts[3]. Therefore, ARs have the possibility to be used as biomarkers for whole grain wheat and rye intake.

Increasing evidence showed that, different cereal types could benefit health differently. Therefore, discovering biomarkers of each whole grain sub-type exposure could be helpful to better understand each cereal type's health beneficial effects. Hence, better dietary guidelines could be suggested to the public.

This mini-review aimed at systematically examining available literatures to obtain information of potential biomarkers for WG barley and wheat. This will prioritize further identification and validation of the thesis work.

2 Materials and Methods

This review referred the 8-step systematic BFIs literature review guidelines[4] .

The objective of this literature review was to identify and evaluate existing biomarkers for dietary assessment for whole grain wheat and whole grain barley.

Some keywords were used to search in 3 database (PubMed, Web of Science, Scopus).

3 Results

3.1 WG Barley

The literature search did not find any direct results about WG barley intake biomarker research. This is probably due to limited dietary exposure of barley in population. Although barley is the 4th most produced cereal grains worldwide. Most of them is used for brewing or feed. Only approximately 4% is consumed directly[5].

One intervention study[6] showed in fecal samples, barley intake can significantly change

Several observation studies investigated correlation between ARs metabolites and whole grain intake. Although they tried to cover more whole grain species, for example, one study

A lot of research were interested in barley's effect biomarkers.

However, barley was not solely listed. Therefore, although ARs and their metabolites got good correlation results with these 'Whole-grain intake'. Whether ARs and their metabolites can indicate WG barley intake needs to be validated.

based on another search results, showed that ARs concentration in WG barley flour has similar concentration

in order to figure out more subjective barley intake, it seems inappropriate to use ARs and their metabolites to quantify.¹.

However, from beer intake biomarker article[7], Hordenine could be a potential biomarker.

3.2 WG Wheat

4 Discussions

5 Appendix

¹My personal viewpoint, how do you consider, Lars?