P0198 COOKING METHODS ONLY NEGLIGIBLY AFFECT DIETARY FIBER CONTENT AND COMPOSITION

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Introduction

Dietary fibers are indigestible by the human host, but fermented by the gut microbiota. Emerging evidence supports the importance of dietary fibers in maintaining gut health and a beneficial gut microbial composition and function.

However, if and how cooking methods affect dietary fiber content has been greatly overlooked, but may represent an important confounder in dietary studies and gut microbial research.

Aims & Methods

We aimed to study the effect of cooking methods on dietary fiber content and composition in commonly used food products using standard cooking methods and contemporary analytical methods.

Potato, onion, oats, and broccoli were selected, and processed using standard cooking techniques (raw, cooking, steaming, baking, and frying). Aliquots of 250 g to 500 g were stored at -20°C. We combined the ISO 17025 validated AOAC 2011.25 and AOAC 2017.17 method to estimate dietary fiber content and composition, using enzymatic gravimetric liquid chromatography (Eurofins, the Netherlands).

Since samples may have taken up fat and water content might change after exposure to the different cooking methods, additional tests and calculations in dried and defatted material were performed to account for this. Only the oats samples did not undergo defatting as the fat content was not expected to exceed 10%.

Results

After food processing, the total dietary fiber (DF) and fractions of insoluble high molecular weight DF, soluble high molecular weight DF and low molecular weight DF remained fairly constant (table 1).

The main difference within a product type was for the onion samples where insoluble high molecular weight DF was lower and soluble high molecular weight DF higher after both cooking methods.

Furthermore, when overlaying the chromatograms, a decrease of fructose was seen in the pan-fried samples, possibly due to the involvement of these sugars in Maillard or caramelization reactions. A higher variation was also be noted in the potato samples, possibly related to changes in resistant starch (RS2) and the formation of resistant starch (RS3).

Table 1: Dietary fiber (DF) results reported on % w/w in the total carbohydrate content of the dried and/or defatted samples.

Sample type	Oats - Raw	Oats - Cooked	Oats - Oven baked	Broccoli - Oven baked	Broccoli - Steamed	Onion - Raw
Insoluble High Molecular Weight DF	8.4	9.7	9.4	43.5	40.9	16.5
Soluble High Molecular Weight DF	4.3	4.4	2.7	16.1	15.6	4.1
Low Molecular Weight DF	0.8	0.8	0.8	1.4	2.0	20.9
Total DF	13.5	14.9	12.9	61.1	58.4	41.6

Conclusion

Cooking methods only negligibly affect dietary fiber content and composition, and should therefore not be taken into account as a major confounder in dietary and gut microbial studies.

Disclosure

Nothing to disclose.