Prevention strategies for type 2 diabetes should be based on evidence-based medical nutrition data. Reply to Uusitupa M, Lindström J, Tuomilehto J [letter]

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Abbreviation

DPS Diabetes Prevention Study

To the Editor: In a recent issue of *Diabetologia*, Uusitupa et al. responded to our review ‘Optimal dietary approaches to prevent type 2 diabetes’, published in *Diabetologia* last year [1, 2]. We are grateful for their detailed critique

which contributes to the much needed constructive debate on this topic.

We fully agree with Uusitupa et al. that recommendations need to rely on the best available evidence. Ideally, dietary advice for prevention of type 2 diabetes would be based on the findings of randomised controlled trials designed to compare different dietary approaches (e.g. low-fat, high-carbohydrate diets vs Mediterranean-type diets vs low-glycaemic-index, high-protein diets) in high-risk individuals. Until such evidence becomes available, we should consider the totality of studies published so far.

One common approach is to draw on the landmark randomised controlled trials, including the Diabetes Prevention Study (DPS) from Finland, that very effectively employed lifestyle modifications to prevent type 2 diabetes [3, 4]. It is interesting that Uusitupa et al. find it misleading to label the diet employed in the DPS as a ‘conventional low-fat high-carbohydrate diet’ [1]. We understand that the DPS participants consumed on average more than the recommended 30% of energy from dietary fat and the typical Finnish carbohydrate-providing foods chosen by them were relatively high in fibre. In fact, many of them may have had a low to moderate glycaemic index (e.g. sourdough rye breads) [5]; it is thus possible that the benefits observed with the dietary approach chosen in the DPS are partly attributable to reduced postprandial glycaemia and insulinaemia. However, in our review, our main argument was that the DPS and Diabetes Prevention Program are commonly *interpreted* as evidence supporting the preferential use of ‘low-fat, high-carbohydrate’ dietary approaches for the prevention of type 2 diabetes [2].

In addition, these impressive landmark randomised controlled trials were not designed to compare the effectiveness of different dietary approaches [3, 4]. We therefore integrated evidence from other relevant studies. As also

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emphasised by Uusitupa et al. [1], the DPS and other diabetes prevention trials demonstrated that weight loss is one of the cornerstones of risk reduction [3, 6]. This is why our focus was the identification of those dietary approaches that are associated with both sustained weight loss in randomised controlled trials and a reduced risk of developing type 2 diabetes in observational studies. Notably, neither the numerous randomised controlled trials on weight loss nor the observational studies on risk of type 2 diabetes support a superiority of ‘a conventional low-fat, high-carbohydrate diet’ [2].

Finally, Uusitupa et al. [1] were concerned that we did not clearly address the quality of fat. We agree that the quality of fat is relevant and that the evidence supports the replacement of saturated fat with unsaturated fat for improved serum lipid levels [7, 8]. However, in our view, type 2 diabetes is first and foremost a disease of carbohydrate metabolism, with worsening insulin resistance and increasing beta cell dysfunction. For a long time, focus on the amount and quality of dietary fat has distracted attention from the relevance of the quantity and quality of carbohydrate. Nonetheless, we agree that optimal dietary approaches should consider both the quality of carbohydrate and that of fat (and even protein). The dietary approaches that we proposed to be more beneficial than low-fat, high-carbohydrate diets were therefore Mediterranean-type diets, low glycaemic index/load diets and, potentially, diets rich in vegetable protein [2].

We agree with Uusitupa et al. that these issues can eventually only be settled by future randomised controlled trials. But given the enormous expense of such studies and the lack of sponsorship from outside the pharmaceutical industry, they may never be undertaken. In the meantime, it should be clearly stated that the body of evidence available to date no longer supports the superiority of ‘low-fat,

high-carbohydrate’ dietary approaches for the prevention of type 2 diabetes.

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Duality of interest J. Brand-Miller is Director of a not-for-profit GI-based food endorsement programme in Australia and manages the University of Sydney GI testing service; she is also co-author of ‘The New Glucose Revolution’ book series (London: Hodder and Stoughton). All other authors declare that there is no duality of interest associated with this manuscript.

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