





# Authors reply to: Limitations of the glycaemic index and the need for nuance when determining carbohydrate quality, by Mitch Kanter, Siddhartha Angadi, Julie Miller Jones, Katherine A. Beals

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We are glad that our article has attracted the interest of Kanter *et al.*<sup>1</sup> However, we disagree on their interpretation of the available literature and on their conclusions. Although they rightly state that in the meta-analysis of Reynolds *et al.*,<sup>2</sup> the relationship between the glycaemic index (GI) of the habitual diet and clinical outcomes was graded as low to very-low (not rare for meta-analyses of observational studies on diet and cardiovascular events), other four meta-analyses report a clear direct relationship between dietary GI and incidence of coronary heart disease.<sup>3</sup> Moreover, the recent paper by Jenkins *et al.*<sup>4</sup> to which they refer, clearly shows that high GI diets were consistently associated with an increased risk of major cardiovascular events or cardiovascular disease (CVD) death in geographically diverse populations.

The high variability of the post-prandial glucose response is widely acknowledged; however, it is not due to the inadequacy of GI as a marker but is a physiological phenomenon depending on the complex interaction between food characteristics other than GI—amount and quality of carbohydrates, protein, fat, fibre, and micronutrients, and on the metabolic status of each person; this, in turn, is influenced by multiple genetic and environmental factors (the latter subject to day-to-day variations).<sup>5</sup> Indeed, even the blood glucose response to an oral glucose load—the simplest and more reproducible test food—has a very large inter- and intra-individual variability<sup>6</sup> and, yet, its measurement, even on a single occasion, represents a reliable marker of future CVD events. Remarkably, the relationship between high GI and CVD has been consistently demonstrated despite the high intra- and inter-individual variability of the post-prandial glucose response. This observation strengthens rather than weakens the role of GI as a marker of CVD risk: in fact, the higher the variability of a marker, the more difficult the identification of its relationship with the outcome.

The evidence described in our paper refers to recent studies in non-diabetic people; therefore, it seems reasonable to reconsider old beliefs on the health relevance of GI and emphasize its usefulness as a marker of healthy carbohydrate foods also in the general population<sup>7</sup>; in this respect, in our paper, we recommend that it should not be the sole parameter to consider, but should be part of a comprehensive evaluation of

these foods, along with dietary fibre, whole grains and other potentially relevant parameters, as recently advocated.<sup>8</sup>

As for potatoes, data consistently indicate that their consumption is not associated with a significant reduction of CVD risk and all-cause mortality<sup>9–12</sup> as constantly reported for the vegetable group as a whole.<sup>3,12</sup> Besides, at variance with non-starchy vegetables, increased potato consumption is associated with higher type 2 diabetes incidence,<sup>13</sup> weight gain, and risk of hypertension.<sup>14</sup> Therefore, in the light of the available evidence, it has been proposed to remove potatoes from the list of vegetables included in the 5-a-day messaging.<sup>15</sup> We believe that the evidence reviewed in our paper fully supports this recommendation

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## Data availability

The data underlying the findings of this study are available in the article and its supplementary material or from the corresponding author upon reasonable request.

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