Comment

Satiety. Let’s put claims in the right context. Comment on ‘Satiety. No way to slim’

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ABSTRACT

There are several as-yet unresolved issues with the scientific substantiation and communication of product claims relating to satiety. Core issues include the context, meaning and scope of these claims, and thus the type of clinical evidence required to support them. In particular, there are a range of potential consumer use-contexts for products carrying these claims, which may not necessarily demand evidence of direct effects on weight loss or even energy intake. By conflating satiety and ‘slimming’ claims, and misrepresenting or deriding wider views in the field, Booth & Nouwen unfortunately obscure rather than bring light to the discussion of these important issues.

Satiety claims: how not to address the issues

There are certainly some interesting and unresolved issues with research and product claims relating to satiety. It would therefore be helpful to have a balanced view of these and some potential solutions articulated. Unfortunately, this is not achieved by Booth & Nouwen’s (2010) discursive opinion piece in this journal, covering a range of topics more and less relevant to the issue. Their title, abstract and prevailing tone convey a broad and rather heavy-handed condemnation of much of the research and claims relating to satiety functionality in foods, as well as the way that industry, academic researchers and regulatory establishments deal with the issues. Setting aside their many deprecatory statements about the beliefs, quality of work and indeed intellectual capacity of the wider scientific and regulatory communities, it is constructive to focus on the substance of this paper.

Misrepresentation of the claims and scientific/regulatory environment

In their opening statement and throughout their text, Booth & Nouwen make the error of combining 2 different and distinct claims: (1) slimming/weight reduction and (2) satiating effects of foods, and treat the latter as though it is only validated by or made meaningful by the former. From a scientific and regulatory standpoint, these are clearly very different things. Weight change in this context describes an integrated outcome of sustained, goal-directed changes in diet and lifestyle, whereas satiety describes possible behavioural effect of products relative to appropriate controls. Satiety claims are generally stand-alone, i.e., in most cases products do not also make explicit functional claims for weight reduction. Where these are joined together in a claim there is indeed an obligation to substantiate both claimed effects or their association.

Claims substantiation in general requires that the basis (ingredient, composition) for the effect is characterized, and a cause–effect relationship between its use and claimed end-effects is demonstrated and achievable. The fact that some products may join satiety and weight loss claims together without meeting that burden of proof does not make this standard or acceptable industry practice. Furthermore, there will always be examples of inappropriate and occasionally outrageous claims reaching the market, due in part to global variation in quality of regulatory frameworks and enforcement. (It is worth noting here that ‘claims’ include all express and implied written and graphic material communicated on or about a product.) However, Booth & Nouwen seem to feel that consumers in any case interpret satiety claims as weight control claims, although no substantive evidence is produced for this. It is equally plausible that consumers seek satiety benefits to help manage feelings of hunger induced by undertaking a broader dietary approach to reduce their energy intake, making this more ‘tolerable’ (Blundell, 2010). Thus products with satiety claims may be used largely as an adjunct to other primary behavioural changes, rather than being seen as a sole or underpinning element of a weight control programme. In other words, satiety claims are not necessarily a direct or even indirect claim that a product on its own will produce weight loss.

Booth & Nouwen try to build their case further, by repeatedly suggesting that food manufacturers and indeed the wider research community promote the view that enhancing satiety alone (however operationalized) will prevent or treat obesity in the absence of a sustained negative energy balance. Clearly that is not
possible, and I am not aware of any knowledgeable person in the field who expounds that view.

By using a specious claim example and then implying it is underpinned by widespread subscription to an erroneous scientific premise, Booth & Nouwen misrepresent the state of art for both claims and scientific opinion. It is then easy for the authors to be critical of their own ‘straw man’ construction of claims and their supposed scientific foundations. Added to this is their rejection of any methodological approaches and evidence other than their own, which becomes a license to dismiss virtually all other expert views and input to the issue. Much of the remaining argumentation is tautological, referring to the lead author’s previous opinion pieces as substantiation for the repetition of same.

‘Slimming satiety’: an argument in favour of satiety claims!

Booth & Nouwen repeatedly refer to their concept of ‘slimming satiety’ as a helpful tool in weight management, this being achieved by an eating pattern favouring certain compositions of meals, foods and drinks. Presumably, the nutritional component of ‘slimming satiety’ must reflect the combined effects of the individual foods eaten within a given pattern. By referring to these effects, Booth & Nouwen must also agree that the total (and thus also individual) food effects are measurable by some appropriate methodology. For example, Booth & Nouwen repeatedly express their view that higher protein intakes – only achievable via foods and beverages with higher protein contents – would be beneficial in this regard. This position can only be valid if they believe these added effects of protein have been substantiated by some means. By deduction, Booth & Nouwen must also believe that individual foods higher in protein positively contribute to ‘slimming satiety’. In other words, they must attribute a ‘specifiable satiating power’ to such individual foods! Given this, it would seem reasonable for them to believe it could be beneficial to communicate this information to consumers via product claims for those same foods. Yet, Booth & Nouwen explicitly deny the notion of foods having ‘a specifiable satiating power’, and the overriding implication of their paper is that it is wrong to believe one can substantiate and attribute variation in ‘slimming satiety’ to the differing effects of single foods.

It is hard to know what to make from these apparently inconsistent positions. Booth & Nouwen also accept the possibility that the beneficial effect they ascribe to protein could be delivered through some other food constituent. Indeed they use the term ‘satisfying foods’, which in the given context implies some individual foods are more satiating than others, while at the same time denying that this could be proven or claimed for any food.

Putting claims in context

One of their arguments against satiety claims for individual foods is that outcomes for energy intake and weight control are dependent on a much wider dietary context. This is obviously true: even if a single food could be shown to have remarkable effects on energy balance in isolation, it is always possible for an individual to use this as part of a diet and lifestyle pattern that leads to weight gain rather than loss. This argument is not new, and says nothing about the validity of the limited product claims per se. As noted, there is an important distinction between claims for satiety and claims for weight management. But in addition claims are not a promise of efficacy for every single individual under all circumstances. Clinical evidence that plant sterols reduce blood cholesterol levels does not mean this will be true for 100% of people, at any consumption level, or combined with a concurrent reduction of other macronutrients (e.g., Gerstein, Woodward-Lopez, Evans, Kelsey, & Drewnowski, 2004; Raben, Agerholm-Larsen, Flint, Holst, & Astrup, 2003; Rolls, Hetherington, & Burley, 1988), though variation observed within these broad classes may be attributable to use and balancing of different food matrices (including control of energy content and density). Booth & Nouwen’s expressed disdain for widely applied methodology behind this evidence base stands in stark contrast to growing consensus in the rest of the field (e.g., Blundell et al., 2010).

It is perhaps worth noting though that the beneficial satiating effects Booth & Nouwen consistently attribute to dietary protein vs other macronutrients is itself far from consistently observed (Eisenstein, Roberts, Dallal, & Saltzman, 2002). Furthermore, in the period since Booth & Nouwen’s manuscript was submitted, the European Food Safety Authority (EFSA) has produced a negative opinion on this same relationship (EFSA Panel on Dietetic Products, Nutrition and Allergies, 2010). Regardless of how one views this literature, there are certainly doubts about the generality of the added satiety effects attributable to dietary protein, the food

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Thus, claims on consumer products often operate within an understood or explicitly advised behavioural or usage context, needed to realize particular end-benefits from the clinically demonstrated actions of the product. There is no clear reason why claims for a product with proven satiety effects should be any different. The fact that some consumers may use such products and fail to reap weight management benefits does not by itself invalidate the specific, limited claims. If a potential consumer benefit is weight control, then the guidance given by manufacturers (such as ‘can only help weight control as part of a calorie-controlled diet’) is not a disclaimer, but a statement of the context (conditions of use) in which the claimed product property (e.g., low energy) or effect (e.g., enhanced satiety) is more likely to be of value for the consumer. This is equally true for all of the dietary and behavioural elements that Booth & Nouwen accept as contributing toward ‘slimming satiety’.

The fact that very long-term weight loss trials typically see weight re-gain after the loss is also not directly relevant to the validity of claims for a product that contributed toward the weight loss. Most long-term dietary trials fail to sustain the effective dietary interventions after weight loss, an issue of compliance (repeat placebo and sustained behaviour change) rather than efficacy. It is no surprise that when a dietary ‘treatment’ is removed, the underlying condition returns. This is true for weight loss diets (or drugs or behavioural programmes) just as it is for blood pressure pills. There are examples where an efficacious dietary exposure has been sustained for much longer durations, and the weight loss or maintenance effects also are sustained (e.g., Fletcher-Mors, Ditschuneit, Johnson, Suchard, & Adler, 2000; Rothacker, 2000). All this tells us is that successful weight control requires a sustained effort, and that is difficult for consumers to maintain. This does not in any case negate a potential benefit of product with enhanced satiety effects as an adjunct to those sustained weight control efforts, nor invalidate the claims of a product referring in a limited way to a proven satiety effect.

Satiating effects of food (components): whose reality?

As an example of ‘mistakes’ they believe plague the field, Booth & Nouwen mention (without references) a widespread belief that ‘only carbohydrate is satiating’. This seems a rather unusual statement, not at all reflecting expert views through at least the past 25 years. Any survey of the literature in this period indicates some degree of satiating effect is generally assigned to all macronutrients (e.g., Gerstein, Woodward-Lopez, Evans, Kelsey, & Drewnowski, 2004; Raben, Agerholm-Larsen, Flint, Holst, & Astrup, 2003; Rolls, Hetherington, & Burley, 1988), though variation observed within these broad classes may be attributable to use and balancing of different food matrices (including control of energy content and density). Booth & Nouwen’s expressed disdain for widely applied methodology behind this evidence base stands in stark contrast to growing consensus in the rest of the field (e.g., Blundell et al., 2010).

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component Booth & Nouwen most directly implicate in ‘slimming satiety’. Perhaps other academic reviewers and regulatory agencies simply apply a different set of standards than Booth & Nouwen (reflecting more ‘mistakes’, ‘confusion’, and ‘misunderstanding’?). Nevertheless, it seems ironic that Booth & Nouwen themselves make a satiety claim which presently has not met the scientific criteria applied to proposed health and nutrition claims for food manufacturers in the European Union.

Low fat and low sugar nonsense?

Although this section of their text is only peripherally related to the main issue of satiety claims, Booth & Nouwen are correct that use of reduced-fat and sugar-free foods are no assurance of improved weight management. However, it is also not quite fair to portray these as conceptually driven by unscrupulous industry marketing. The nutritional justification and encouragement from governmental and non-governmental bodies to reduce the presence of fats and added sugars in the diet does not originate from industry laboratories or market research, but from very consistent national and international guidelines developed by academic experts. Booth & Nouwen may not agree with those guidelines, but responsible manufacturers have an obligation to base their nutritional positions on such global consensus statements, which have been the basis for nutritional standards and reformulation efforts (see e.g., Nijman et al., 2007). Furthermore, there is both external pressure and consumer demand for manufacturers to offer a range of products which includes options reduced in particular ingredients and energy.

With regard to the non-nutritive sweeteners specifically, reviews of the clinical evidence consistently conclude that effects of their use, particularly in beverages, is neutral or beneficial in reducing risk of excessive energy intake (e.g., de la Hunty, Gibson, & Ashwell, 2006; Dennis, Flack, & Davy, 2009; Drewnowski, 1999; Drewnowski & Bellisle, 2007; Duffy & Sigman-Grant, 2004; Mattes & Popkin, 2009). Still, the supporting evidence base is imperfect, and effects are inevitably dependent on how consumers use these products. ‘If non-nutritive sweeteners are used as substitutes for higher energy yielding sweeteners, they have the potential to aid in weight management, but whether they will be used in this way is uncertain’ [Mattes & Popkin, 2009]). So is offering consumers non-caloric sweetened beverages really promoting ‘magical thinking’? It would be interesting to know how Booth & Nouwen would balance all of these considerations as a food manufacturer. Would they deny these alternatives to consumers, or what would they do differently?

The real question: what evidence is needed to substantiate satiety claims?

Booth & Nouwen are never completely explicit in what if any type of effect could be sufficient to substantiate the added contribution a food could make toward ‘slimming satiety’, though seem to lean toward the evidence coming from long-term impacts on energy intake or weight loss.

Perhaps the greatest challenge facing regulatory agencies is to resolve the actual or implied meaning and scope of satiety claims, and thus the type of clinical evidence required to support them. A range of different opinions on this are expressed and debated in scientific and regulatory discussions of satiety claims (see also Blundell, 2010; van Kleef, van Trijp, van den Borne, & Zondervan, in press), e.g.:

1. Satiety claims may be limited statements about the beneficial effects of a product on (acute) post-ingestive appetite motivations (self-ratings), and thus validated by evidence of these effects alone.
2. Satiety claims convey the expectation of an effect on subsequent eating, and are only meaningful and justified by proving a direct (sustained) effect on energy intakes.
3. Satiety claims are implicit claims for weight management, and therefore need to be substantiated by evidence of improved weight loss or maintenance.

So, is evidence of an enhanced feeling of satiety alone sufficient, or is evidence of reduced energy intake or body weight required, and if so in what timeframes and contexts? If ‘feeling hungry’ is a perceived issue for consumers (and there are abundant proprietary survey data indicating this), then products proven to counter this are arguably delivering to this need. Furthermore, where an existing weight management diet or programme itself provides for a reduced energy intake, enhancements of satiety may be seen as improving the consumer weight loss experience alone (reduced dysphoria) rather than directly changing energy intakes or rate of weight loss. Within this context, it is not at all obvious that demonstrated effects on energy intake or weight loss are necessary to substantiate a claimed satiety effect, which may still be beneficial for consumers. In other product and claim contexts though, there may be an argument for such additional supporting evidence.

These differing contexts and interpretations of satiety claims lead to markedly different requirements for the type, timeframes, and complexity of final product claims substantiation. Within each of these alternatives, there is also a further array of sub-issues and potential measurement options relating to specific test measures, durations and settings that can be considered, to ensure that substantiation activities will be both efficient and appropriate for underpinning desired claims. The demonstrated effects then need to be communicated in a responsible way that is limited to what is proven, which may also include statements on the use-context in which that product would be advantageous.

Improved understanding of where satiety is delivering benefits for consumers will give better focus to academic and industrial research in this area, as well as guidance for the scientific substantiation and assessment of claims. This will also help to identify how and where research efforts relating to technical innovation in this area can be most effectively and responsibly applied and communicated in practice. While Booth & Nouwen are correct to draw attention to the topic, their handling of the issues is in many ways inconsistent, misleading, and generally more inciting than insightful.

References

EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA). (2010). Scientific opinion on the substantiation of health claims related to protein and increase in satiety leading to a reduction in energy intake (ID 414, 616, 730), contribution to the maintenance or achievement of a normal body weight (ID 414, 616, 730), maintenance of normal bone (ID 416) and growth or maintenance of muscle mass


