



August 28, 2014

SACN Secretariat  
Public Health England  
4th Floor Wellington House  
133-155 Waterloo Road  
London SE1 8UG

*Submitted electronically at: [sacn@phe.gov.uk](mailto:sacn@phe.gov.uk)*

**RE: Scientific Consultation on Draft SACN Carbohydrates and Health Report**

The Grocery Manufacturers Association (GMA) respectfully submits comments to the UK Scientific Advisory Committee (SACN) on Nutrition on its Draft SACN Carbohydrates and Health Report published in June 2014.

Based in Washington, D.C., GMA is the voice of more than 300 leading food, beverage and consumer product companies that sustain and enhance the quality of life for hundreds of millions of people in the United States and around the globe. Founded in 1908, GMA is an active, vocal advocate for its member companies, and a trusted source of information about the industry and the products consumers rely on and enjoy every day. The association and its member companies are committed to meeting the needs of consumers through product innovation, responsible business practices and effective public policy solutions developed through a genuine partnership with policymakers and other stakeholders. In keeping with its founding principles, GMA helps its members produce safe products through a strong and ongoing commitment to scientific research, testing and evaluation and to providing consumers with the products, tools and information they need to achieve a healthy diet and an active lifestyle. The food, beverage and consumer packaged goods industry in the United States generates sales of \$2.1 trillion annually, employs 14 million workers and contributes \$1 trillion in added value to the economy every year.

GMA appreciates SACN's efforts to ensure their recommendations regarding carbohydrate intake reflect the current evidence base. GMA believes dietary guidance recommendations intended to inform policy development and public health interventions must be based on the totality of available scientific evidence. The comments below address the definition of "free sugars" and fiber, the proposed Dietary Reference Values (DRV) for free sugars and fiber, as well as the treatment of whole grains within the report. GMA also offers some additional comments for SACN's consideration on additional research to include in the report.

**GROCERY MANUFACTURERS ASSOCIATION**

1350 I Street, NW :: Suite 300 :: Washington, DC 20005 :: ph 202-639-5900 :: fx 202-639-5932 :: [www.gmaonline.org](http://www.gmaonline.org)

## **Definition of “Free Sugars”**

The report includes a recommendation to adopt the WHO definition for “free sugars” in place of the present term ‘non-milk extrinsic sugars’. The WHO definition includes naturally-occurring sugars in fruit juice and fruit concentrates. This inclusion in the “free sugars” definition puts into question the consumption of 100% fruit juice and fruit concentrates. Research consistently shows the consumption of 100% juice is associated with better diet quality and increased intake of essential nutrients. Additionally, no association was found between 100% juice consumption and body weight or adiposity measures.<sup>1</sup>

## **Recommendation for DRV for free sugars be set at a population average of 5% of total energy intake**

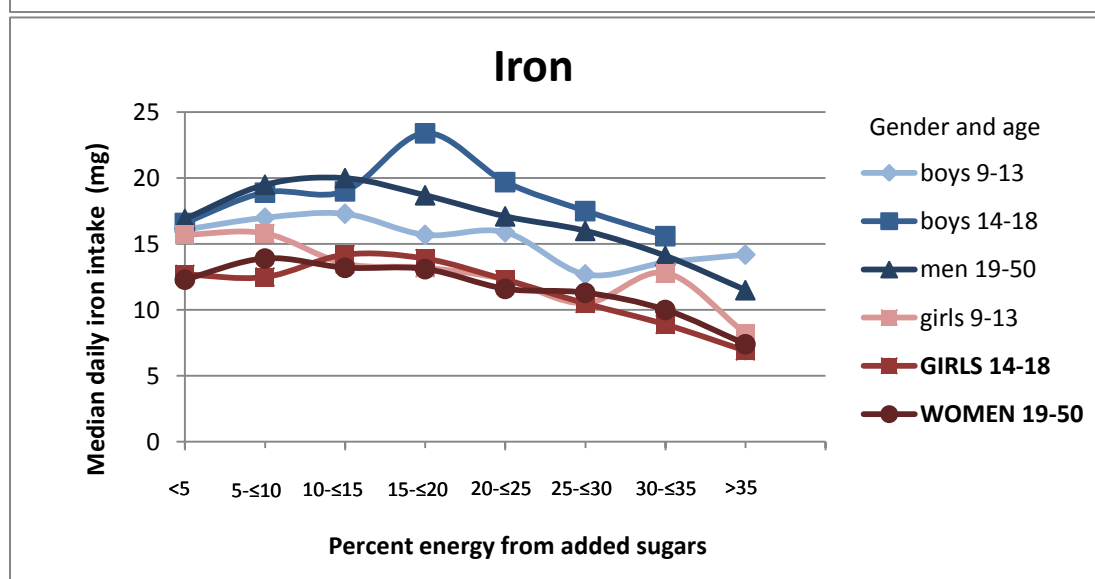
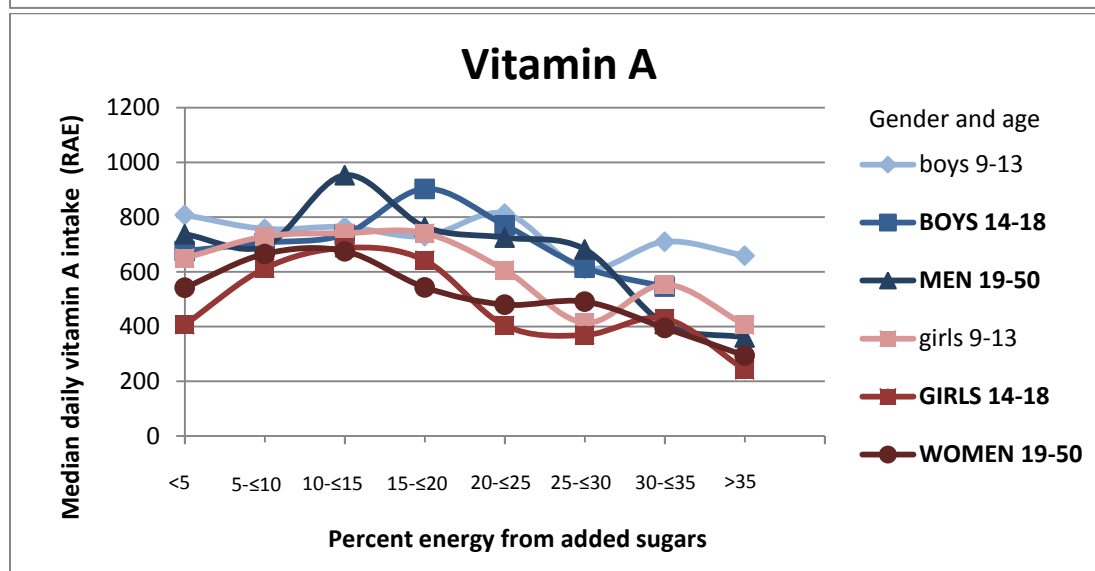
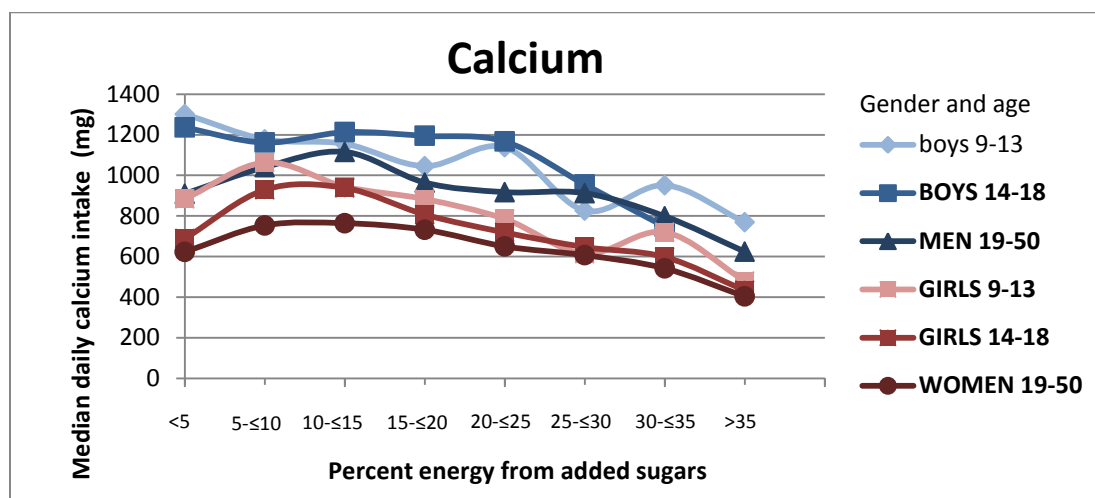
Dietary guidance recommendations intended to inform policy development and public health interventions must be based on the totality of available scientific evidence. The evidence-base must be robust, of the highest quality, reproducible, and representative of and applicable to the majority of a population. There is insufficient scientific justification for recommending that the intake of free sugars be under 10% of total energy. The potential consequence of sugar intake below 5% of energy intake was not addressed in the report. The available evidence on intake of “added sugars” at 5% or less of energy suggests dietary inadequacy of several nutrients when sugar intake is at this low intake level. The Institute of Medicine (IOM) illustrated the shortfall intakes of calcium, vitamin A and iron in population groups in the US when added sugar intake was 5% or less of total energy intake (see highlighted [bolded and all caps] age/gender groups in charts below).<sup>2</sup> The trends illustrated below are further reinforced by analysis of data from the National Health and Nutrition Examination Survey (NHANES) 2003-2006.<sup>3</sup> The shortfalls are most likely due to low intakes of otherwise healthful foods including fruit and vegetables (including juices), dairy products, and fortified grains. The highest levels of consumption of these essential nutrients is seen when added sugar intake is between 10 and 15% of total energy intake.

---

<sup>1</sup> O’Neil CE, Nicklas TA, Rampersaud GC, Fulgoni VL. One hundred percent orange juice consumption is associated with better diet quality, improved nutrient adequacy, and no increased risk for overweight/obesity in children. *Nutrition Research*. 2011, 31(9):673-682.

<sup>2</sup> Institute of Medicine. *Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids*. Washington, DC: National Academy Press, 2002.

<sup>3</sup> Marriott BP, Olsho L, Hadden L, Connor P. Intake of added sugars and selected nutrients in the United States, National Health and Nutrition Examination Survey (NHANES) 2003-2006. *Crit Rev Food Sci Nutr*. 2010 Mar;50(3):228-58.



## Summary of Evidence: Body Weight

Many studies and reports including the 2010 Dietary Guidelines Advisory Committee Report have shown that with respect to weight loss, reducing total caloric intake is more important than the source of calories and “excess energy in any food form will promote body fat accumulation.”<sup>4,5,6,7</sup> The effect of a single nutrient such as sugar on body weight has been investigated through numerous Randomized Control Trials (RCTs) over the past decade. Overall these studies concluded that even though calories from sugar have been shown to increase weight under hypercaloric conditions, when sugar is consumed in isocaloric amounts excess body gain cannot be solely attributed to sugar intake, regardless of whether the sugar is added or inherent.<sup>8</sup> This conclusion is further reinforced in the AHA/ACC/TOS Guidelines for the Management of Overweight and Obesity in Adults. As found in the guidelines, a variety of dietary approaches can produce weight loss if the approach is associated with a reduction in total calorie intake.<sup>9</sup> Thus, the appropriate approach takes into account the other nutrients, if any, that accompany the intake of a particular sugar-containing food as part of total diet/total calorie reduction objective.

The Draft Report concludes that as “free sugars intake is a dietary factor shown to increase energy intake, decreasing the population intake of free sugars is a step that could be taken to help reduce the current UK over-consumption of energy”. The estimated daily energy reduction provided by the Calorie Reduction Expert Group and the associated calculation for the amount of energy reduced per 1% intake in free sugars implicitly assumes that the energy from sugars will not be replaced in the diet, or will only be replaced by foods with lower energy density. However, it is conceivable that substantial reductions in energy from sugars may lead to some compensation of intake of energy from other nutrients, for example, (saturated) fats or alcohol.<sup>10</sup> GMA recommends SACN consult the compensation literature to examine the potential impact of the reduction of free sugar intake on overall energy intake.

Additionally, there does not appear to be a linear relationship between BMI and intake of added sugars. In fact, a greater proportion of individuals classified as underweight and normal weight by BMI were reported to have higher levels of added sugars intakes than individuals classified as overweight or

---

<sup>4</sup> Bray GA, et al. Effect of dietary protein content on weight gain, energy expenditure, and body composition during overeating: a randomized controlled trial. *JAMA* 2012;307(1):47-55.

<sup>5</sup> de Souza RJ, et al. Effects of 4 weight-loss diets differing in fat, protein, and carbohydrate on fat mass, lean mass, visceral adipose tissue, and hepatic fat: results from the POUNDS LOST trial. *Am J Clin Nutr*.2012;95(3):614-625.

<sup>6</sup> Hess J et al. The confusing world of dietary sugars: definitions, intakes, food sources, and international dietary recommendations. *Food & Function*.2012;3(5):477-486.

<sup>7</sup> Lowndes J, Kawiecki D, Pardo S, Nguyen V, Melanson KJ, Yu Z, Rippe JM. The effects of four hypocaloric diets containing different levels of sucrose or high fructose corn syrup on weight loss and related parameters. *Nutrition Journal* 2010;11:55

<sup>8</sup> Kahn R and Sievenpiper JL. Dietary Sugar and Body Weight: Have We Reached a Crisis in the Epidemic of Obesity and Diabetes? We Have but the Pox on Sugar Is Overwrought and Overworked. *Diabetes Care* 2014;37:957-962.

<sup>9</sup> AHA/ACC/TOS. Guideline for the Management of Overweight and Obesity in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *J Am Coll Cardio* 2014;63(25):2985-3023.

<sup>10</sup> Sadler MJ, McNulty H, Gibson S. Sugar-Fat Seesaw: A Systematic Review of the Evidence. *Critical Reviews in Food Science and Nutrition*. 2013.

obese.<sup>3</sup> In a recent meta-analysis of trials with dietary sugars and body weight, the researchers found increasing sugar intake was associated with weight increase, but the isoenergetic exchange of sugars for other carbohydrates had no statistically significant effect on body weight.<sup>11</sup> Additional long term intervention studies should be conducted to ascertain that there are no negative effects on adequacy of nutrient intakes when free sugars intake is reduced, as well as, specifically measuring the effect of free sugar intake on obesity.

### Summary of Evidence: Dental Caries

The development of dental caries is complex and multifactorial. It is dependent on the presence of oral bacteria and fermentable carbohydrates (sugars and some starches). It also is influenced by the susceptibility of the tooth, the bacterial profile, the quantity and quality of the saliva, and the time during which fermentable carbohydrates are in contact with bacteria.<sup>2,12</sup> The available evidence also suggests that the frequency of sugar consumption, the stickiness of the food, and the length of time between sugar intake and tooth brushing may play a bigger role in the development of tooth decay than the quantity of sugar consumed.<sup>11,13</sup>

- Frequency of consuming sugar-containing foods (rather than total amount of sugar) is the primary dietary factor by which sugars contribute to risk of dental caries.<sup>11,14</sup> It is only the correlation of sugar intake with frequency of intake,<sup>12</sup> that explains an apparent association between sugars and dental health. This does not provide evidence for a threshold.
- The IOM concluded that “dental caries is a disorder of multi-factorial causation” and that “because of the various factors that can contribute to dental caries, it is not possible to determine an intake level of sugar at which increased risk of dental caries can occur;”<sup>2</sup>
- EFSA concluded that “...available data do not allow the setting of an UL for sugars on the basis of a risk reduction for dental caries, as caries development related to consumption of sucrose and other cariogenic carbohydrates does not depend only on the amount of sugar consumed, but it is also influenced by oral hygiene, exposure to fluoride, frequency of consumption, and various other factors. Evidence on the relationship of frequency of consumption of sugar-containing foods and dental caries should be considered when developing food-based dietary guidelines.”<sup>12</sup>

---

<sup>11</sup> Te Morenga L and J Mann. Dietary sugars and body weight: systematic review and meta-analyses of randomized controlled trials and cohort studies. *British Medical Journal*. 2013;346:e7492.

<sup>12</sup> European Food Safety Authority (EFSA) Scientific Opinion on Dietary Reference Values for carbohydrates and dietary fibre. *EFSA Journal*. March 2010;8(3):1462.

<sup>13</sup> Rugg-Gunn AJ. Dental caries: Strategies to control this preventable disease. *Acta Medica Academica* 2013;42(2):117-130.

<sup>14</sup> Gustafsson BE, Quensel CE, Swender Lanke L, et al. The Effect of Different Levels of Carbohydrate Intake on Caries Activity in 436 Individuals Observed for Five Years. *Acta Odontologica Scandinavica*, 1953, 11(3-4)232-364.

## Requests for Clarification

The report indicates that two Randomized Control Trials (RCTs), Mazlan et al, 2006<sup>15</sup> and Volp et al. 2008<sup>16</sup>, were not included in the analysis on diets differing in the proportion of sugars in relation to energy intake. GMA asks for clarification as to why these trials could not be included in the meta-analysis, particularly what necessary data was missing from the trials. We also request additional clarification and expansion of rationale for some inclusion and exclusion criteria used (such as 3yr follow-up for cohort studies, including only intervention trials that were a minimum of a year in length, and what is considered “the same period of time” for excluding cohort results in which a change in intake and change in outcome are reported).

## Definition of Fiber

To facilitate a fiber definition with a greater degree of global harmonization, GMA urges UK SACN to reconsider their proposed definition of dietary fiber. The following definition of dietary fiber is more congruent with a variety of other recognized definitions (e.g. Codex, AACCI)<sup>17,18,19</sup>:

“Dietary fiber is defined as non-digestible soluble and insoluble carbohydrates (with 3 or more monomeric units) and lignin or other compounds associated with polysaccharides in the plant cell walls, such as waxes, cutin, and suberin, that are intrinsic and intact in plants, or that are isolated or synthetic”.

## Recommendation for DRV for fiber be set at 30g/day

SACN indicate in the report the quality of evidence has been strengthened on the relationship between a diet rich in fiber and reduced risk for Non-Communicable Diseases (NCDs) such as type 2 diabetes mellitus, cardiovascular disease and colorectal cancer. This evidence is used as the basis for increasing the DRV for fiber to 30g/day. We ask that SACN reconsider the proposed increase of the fiber DRV from 23-24g/day to 30g/day (a 20-24% increase). Consumption studies indicate that fiber intake is closely linked to calorie intake; thus, recommendations to reduce calorie intake may make increasing fiber intake challenging. Conversely, recommendations to increase fiber intake may increase calorie intake.

---

<sup>15</sup> Mazlan N, Horgan G, Whybrow S, Stubbs J. Effects of increasing increments of fat-and sugar-rich snacks in the diet on energy and macronutrient intake in lean and overweight men. *British J Nutr.* 2006;96:596-606.

<sup>16</sup> Volp ACP, Hermsdorff HHM & Bressan J (2008) Glycemia and insulinemia evaluation after high-sucrose and high-fat diets in lean and overweight/obese women. *J Physiol Biochem* 2008;64:103-144.

<sup>17</sup> Joint FAO/WHO Food Standards Programme, Secretariat of the Codex Alimentarius Commission. *Codex Alimentarius (Codex) Guidelines on Nutrition Labeling CAC/GL 2–1985 as Last Amended 2010*, Rome: FAO; 2010.

<sup>18</sup> AACC Dietary Fiber Definition Committee. “Definition of Dietary Fiber: Report of the Dietary Fiber Definition Committee to the Board of Directors of the American Association of Cereal Chemists,” *Cereal Foods World*, 2001; 46(3):112–126.

<sup>19</sup> Institute of Medicine (IOM), U.S. National Academy of Sciences. *Dietary Reference Intakes: Proposed Definition of Dietary Fiber*. Washington, D.C: National Academy Press, 2001.

In addition, the 30g recommendation is not appropriate for people requiring fewer calories. Finally, from a global perspective, both the WHO/FAO and EFSA recommend 25g of fiber per day as the amount needed for healthy laxation.<sup>20,21</sup>

### **Whole Grain Comments/Additional Research Considerations**

SACN's final recommendations do not call out a specific whole grain recommendation, rather the health benefits of whole grain were acknowledged within the dietary fiber recommendations. However, there is an opportunity to differentiate the separate benefits of whole grain separate from dietary fiber recommendations. When controlled for fiber, evidence shows whole grain intake has independent health benefits. Per SACN's own review, evidence indicated that whole grain intake has health benefits separate from fiber, such as lower incidence of cardiovascular disease, type 2 diabetes mellitus, hypertension and colon cancer (section 12.16)

While whole grain recommendations may have been difficult to refine, due to variances in whole grain definitions across studies, as noted in the SACN report as well as the rigorous exclusion/inclusion criteria used, we recommend that SACN consider specific whole grain recommendations based on associated health benefits. The importance of whole grain as part of a healthy dietary pattern is recognized by many countries which is evidenced by specific dietary guidance for whole grain intake.<sup>22,23</sup>

Additionally, SACN could resolve some of the challenges in providing a recommendation specific to whole grain if the research evaluated under total cereals and whole grain bread were combined as SACN has not articulated rationale for separating this research. We recommend SACN use a recent roundtable report regarding a definition of whole grain foods which would standardize a whole grain food as characterized by 8g of whole grain per 30g of product as opposed to the health claim standards cited in 2.38 -2.39.<sup>24,25</sup> We also recommend additional literature and endpoints be considered for evaluation, such as body weight and body composition.<sup>26,27,28</sup>

---

<sup>20</sup> Nishida, C., R. Uauy, S. Kumanyika, P. Shetty. Joint FAO/WHO Expert Consultation. Carbohydrates in Human Nutrition, Food and Agriculture Organization. World Health Organization. FAO Food and Nutrition Publ Health Nutr, 7:245-250, 2004.

<sup>21</sup> European Food Safety Authority. Outcome of the Public Consultation on the Draft Opinion of the Scientific Panel on Dietetic Products, Nutrition and Allergies (NDA) on Dietary Reference Values for Carbohydrate and Dietary Fibre. EFSA Journal, 2010;8:1508-1569.

<sup>22</sup> <http://wholegrainscouncil.org/whole-grains-101/whole-grain-guidelines-worldwide>

<sup>23</sup> United States. Dept. of Agriculture and Dept. of Health and Human Services. Dietary Guidelines for Americans 2010. Washington, D.C.: U.S. Government Printing Office (2010).

<sup>24</sup> Ferruzzi M, Jonnalagadda S, Liu S, Marquart L, McKeown N et al. Developing a standard definition of "Whole Grain Foods" for dietary recommendations: Summary report of a multidisciplinary expert roundtable discussion. Adv Nutr. 2014;5(2):164-76.

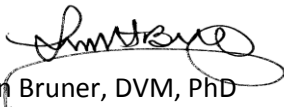
<sup>25</sup> <http://www.aaccnet.org/about/newsreleases/Pages/WholeGrainProductCharacterization.aspx>

<sup>26</sup> Qi, L., et al. Consumption of whole grain and cereal fiber with total and cause-specific mortality: prospective analysis of 367,442 individuals (628.17) FASEB J April 2014;28:628.17.

We urge the Committee to continue to elevate the importance of whole grains as an important source of fiber and other nutrients through specific recommendations for dietary intake. While recent scientific findings have confirmed the importance of whole grains in helping to meet fiber recommendations,<sup>29</sup> fiber content is not a consistent predictor of whole grain content nor does it ensure whole grain intake. The fiber content of a whole grain food will also vary depending on the type of grain, density of the product, moisture content, and other ingredients that define the product characteristics. In addition to fiber, whole grains provide vitamins, minerals and phytonutrients that contribute to diet quality and may help reduce risk of diseases.<sup>30,31</sup> Although it is often overlooked, whole grains contain higher levels of beneficial phytonutrients than many fruits and vegetables.<sup>32</sup> We encourage further study of other beneficial constituents of whole grain.<sup>23</sup>

GMA appreciates SACN's efforts to ensure their recommendations regarding carbohydrate intake reflect the current evidence base. GMA believes dietary guidance recommendations intended to inform policy development and public health interventions must be based on the totality of available scientific evidence. GMA recommends SACN reconsider their definition of "free sugars" and fiber, proposed DRV for free sugars and fiber, as well as the treatment of whole grains within the report. Thank you for the opportunity to provide comments.

Sincerely,



Leon Bruner, DVM, PhD  
Executive Vice President  
for Scientific and Regulatory Affairs  
and Chief Science Officer  
Grocery Manufacturers Association

---

<sup>27</sup> Koh-Banerjee P, Franz M, Sampson L, et al. Changes in whole-grain, bran, and cereal fiber consumption in relation to 8-y weight gain among men. *Am J Clin Nutr* 2004;80:1237-45.

<sup>28</sup> Egeberg R, Olsen A, Loft S, Christensen J, Johnsen NF, Overvad K, et al. Intake of wholegrain products and risk of colorectal cancers in the Diet, Cancer and Health cohort study. *Br J Cancer* 2010;103:730-4.

<sup>29</sup> Reicks M et al. Total dietary fiber intakes in the US population are related to whole grain consumption: results from the National Health and Nutrition Examination Survey 2009 to 2010. *Nutr Res* 2014;34:226-234.

<sup>30</sup> Okarter N, Liu RH. Health Benefits of Whole Grain Phytochemicals. *Crit Rev Food Sci Nutr*.2010;50(3):193-208.

<sup>31</sup> Fardet, A. New hypotheses for the health-protective mechanisms of whole-grain cereals: what is beyond fiber? *Nutr Res Rev*.2010;23(1):65-134.

<sup>32</sup> Liu RH. Whole grain phytochemicals and health. *J Cereal Sci.* 2007;46:207-19.