

The “processed truth”

In this short viewpoint piece, I provide an alternative look at the basis underlying dietary advice for people with type 2 diabetes and obesity.

Information in this area is seemingly conflicting, but it is common for obese people with type 2 diabetes to be advised to eat a low-fat diet. In my view, there is insufficient clinical evidence to support low-fat diets as the optimal approach (e.g. Alhazmi et al, 2012) and in fact there is more evidence to suggest eating a high-protein or Mediterranean diet is beneficial (Brown et al, 2010; Swedish Council on Health Technology Assessment, 2013). Are we, however, asking ourselves the wrong questions about diet and therefore getting the wrong answers? What answers would we get to the question “What are we ‘designed’ to eat to be healthy?”

The earliest fossil remains of *Homo sapiens sapiens* date back to approximately 200 000 years ago, and genetically our species is approximately 99.9% similar to *Homo erectus*, a close relative in the hominin family tree that has been dated back as far as 1.9 million years ago (Hines, 2009). For millennia our way of life and our food revolved around what we could grow, hunt and gather from nature (Leach et al, 2006).

Manufactured fats, chemical fertilisers, fortification, processed foods and genetic modification are all essentially modern phenomena, generally being from the past 100 years (Schmidt, 2005; Samaniego-Vaesken et al, 2012). Genetically, we have not changed over this short period, but our food has changed dramatically (Schmidt, 2005; Hines, 2009). There has been insufficient time for natural selection to drive the evolution of metabolic processes to which a typical westernised diet and lifestyle will not be detrimental (Coffey, 2001).

Each human is different and will have grown up, or be growing up, in a different

environment; as such, our macronutrient ratios requirements will vary (Price, 2003). Simple broad-brush approaches to adjusting macronutrient ratios with a goal of obtaining weight loss may therefore not be appropriate.

A very different way of thinking about nutrition is that we may lose, and therefore need to replace, up to 3 million cells a second (Mack, 2001). For this replacement of cells, the body requires adequate intake of nutrients, amino acids, trace elements and minerals. This brings me to my next point, which concerns processed foods.

Processed foods

Processed food products contain minimal “natural nourishment” on account of pasteurisation, homogenisation, fortification, the addition of numerous chemicals (to enhance taste and improve shelf-life) and re-heating (Webster et al, 2010; Van Gysel et al, 2012; NHS Choices, 2013; NutritionData.com, 2013). These processes can make the food more difficult to digest in the stomach (McMichael, 2005) and may have made the remaining nutrients more difficult to access (Fallon and Enig, 2001). Simply put, highly processed foods do not provide nourishment and calories in the optimal ratios for our body’s needs (Hockett and Haws, 2003).

Little research has been published on the overall impact of processed foods on obesity and type 2 diabetes. There is, however, evidence to show the impact on our bodies of common constituents of processed foods, such as high-fructose corn syrup (HFCS) and trans fats.

Effect of high-fructose corn syrup on the body

HFCS is often used as an alternative to sucrose and is found in most processed meals



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(Howard and Wylie-Rosett, 2001), but it does not currently need to be labelled explicitly on packaging in the UK. Fructose is broken down differently from glucose and sucrose and has to be processed and stored in the liver (Basaranoglu, 2013). Unlike glucose, fructose does not stimulate insulin secretion or enhance leptin production and because insulin and leptin act as key afferent signals in the regulation of food intake and body weight, dietary fructose may contribute to increased energy intake and weight gain (Bray et al, 2004). Consumption of fructose is also associated with adverse alterations of plasma lipid profiles (Goran et al, 2013), metabolic changes (Basaranoglu, 2013), type 2 diabetes (Goran et al, 2013) and impaired cognitive function (Lakhan and Kirchgessner, 2013). These observations indicate a role of HFCS in the obesity epidemic, but more research is needed in this area before definitive conclusions can be drawn.

Effect of processed fats on the body

Compared with natural, unprocessed cis fatty acids, trans fats have a different effect on lipid profiles (Mensink et al, 1992; Howard and

Wylie-Rosett, 2001; Harvard School of Public Health, 2014) and might adversely promote inflammation and over-activity of the immune system, phenomena that may, it has been posited, be linked to an increased risk of heart disease, stroke, diabetes and other chronic conditions (Mozaffarian et al, 2004; Brown et al, 2010; Iwata et al, 2011). Consumption of trans fat has also been linked to a reduction in the normal healthy responsiveness of endothelial cells (Katan et al, 1995). In addition, a study in primates showed that monkeys fed trans fatty acids gained weight and deposited more central fat even without increased food consumption, and they also displayed impaired glucose tolerance (Kavanagh et al, 2007).

Effect of chemical additives on the body

Practically, it is very difficult to isolate the impact of any one chemical additive on the body. Of relevance to the theme of this piece, though, it has been postulated that among the health risks chemical additives may pose, the storage of such substances in newly created fat cells may impede weight loss (Richards, 2012).



Summary

The imbalance between our current lifestyles and that of our ancestors manifests itself, in part, as an increased risk of obesity and type 2 diabetes, and of ill health in general (Leach, 2006; Swedish Council on Health Technology Assessment, 2013). I believe that in offering dietary advice for people with diabetes that will promote weight loss and better health, we need to go beyond simple macronutrient ratios and consider the need to cut back on processed products and instead eat more natural foods. ■

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