There are three questions to which the articles in this edition propose to offer a few answers.

- What if our diet was in such a sorry state that it no longer gave us any pleasure? It is a question worth asking at a time when everyone feels assailed by endless advice, recommendations and warnings. In fact, eating is much more than taking in food. It has a triple purpose: nutritive, hedonic and symbolic, ensuring the survival and emotional destiny of eaters and their integration into the human community. The pleasure obtained is a biological and psychological reality which is essential to us all.

- Are liquid calories equivalent to solid calories? The results of recent work on the subject improve our understanding of how to take account of liquid calories, in terms of monitoring food intake and the energy balance. A complex subject which merits further studies which would help to clarify the situation.

- Can sucrose cause hypoglycaemia early after ingestion? Medical logic would indicate that, when symptoms suggesting hypoglycaemia occur, a genuine fall in blood glucose should be apparent. However, it must now be acknowledged, in the light of scientific publications on the subject, that this is rarely the case.
Even in the case of healthy nutrition, pleasure can marry, with reason. Contrary to much conventional wisdom different scientific disciplines converge in attributing a decisive role to pleasure in the regulation of food intake.

The pleasure of eating, a psychological sensation in response to a biological need, corresponds to the feeling of well-being experienced when hunger has been satisfied by food with a pleasant taste. The pleasure of eating is already felt at a very young age. Psychologists say that it is aroused by taste and is then built up by experience throughout our lives. From birth, children demonstrate through their gestures of pleasure an innate attraction to sugar and, conversely, a distaste for anything bitter or acidic. Very quickly, sensory and emotional stimuli condition the child to produce a range of choices and preferences.

Good to eat, good to think

Going beyond these aspects, the pleasure of eating is also determined by its cultural and emotional dimension. Pleasure shows that an individual’s internal sensations is in harmony with his external environment. In order to enjoy it, food must be, as Lévi-Strauss puts it, “good to eat” and “good to think”, i.e. in keeping with an eating culture itself conditioned by the values of society. A meal feeds both the body and the mind. The pleasure of eating helps establish an emotional balance. Our food choices and desires form part of our identity and define the cultural group to which we belong: everyone’s individual experience is inseparable from a collective experience.

From pleasure denied to pleasure thwarted

When simplistic messages demonise the pleasure of eating, the “good to think” becomes blurred. For example, in the cognitive restriction syndrome described back in 1980 by Herman and Polivy, an individual faced with certain foods thinks both of the good (“I like”) and the bad (“but it will make me fat”). As a result, he feels guilty, turns his attention away, deprives himself and forces himself to eat foods that are considered to be correct. These negative thoughts temporarily prevent him from enjoying the pleasure of certain tastes, but eventually he can no longer resist. He not only eats more than he wanted … he often eats more than he would have done if he had not tried to eat less.

The fact is that the mechanism which makes pleasure a powerful regulator of food intake is extremely complex. Not only does pleasure force us to satisfy our needs as omnivores but also it leads us to do so through diversity in our foods by making us dislike repetition. It therefore operates at both a qualitative and a quantitative level. Eating pleasurably, i.e. with a “good appetite”, enables us to achieve the sensation of well-being linked with satiety and then to stop eating.

Overeating: the dilemma

If nature is working properly, then the individual must listen to his own signals: hunger, which signals the need to eat, and satisfaction, which says “stop”. The crucial question therefore arises of pleasure faced with choice. The greater personal choice and freedom, the greater an individual’s responsibility. This freedom of choice gives rise to a state of stress. As far as food is concerned, the logic of contemporary societies leads us to be aware, competent, rational and individualistic eaters, yet this model has not proved its efficacy in preventing excess.

Regulated pleasure, constructed pleasure

To encourage children to widen their preferences, dietary psychologists set out to weaken the rejection of certain foods through education. For this, children are offered a dietary model in which the notion of pleasure is central: regulated pleasure for high-energy foods, and constructed pleasure for foods of good nutritional quality that are often rejected at first. A kind of education in taste, an initiation in the pleasure of eating, with a step towards a balanced diet through diversification.

M.-S. B.

Are liquids less satiating than solids?

A number of studies have implied that there is a link between sugar consumption, especially from beverages, and obesity. The increased prevalence of obesity in the USA, especially among children and adolescents has occurred concurrently with increased availability of energy-containing sweetened beverages. Some have speculated that these liquid calories do not satisfy the appetite as well as calories from solid foods. Sugar-sweetened beverages are said to promote obesity by low satiety and high added sugar content.

Some have speculated that these liquid calories do not satisfy the appetite as well as calories from solid foods.

This simple theory, however, lacks clear evidence. Many studies on the subject have been poorly designed and the results have not been consistent. There are also technical difficulties in assessing whether individual components of the diet may be responsible for obesity, or merely a general over-consumption of all sources of food energy.

Obesity is a complex problem that has so far eluded easy answers. Weight gain occurs when energy intake from food and beverages is greater than the energy output. This difference between energy intake and energy output can be influenced by many behavioural and socio-economic factors. The major factors in obesity are bad eating habits and, increasingly, sedentary lifestyles.

Several studies have investigated the possible association between soft drinks consumption and weight gain and obesity. Some studies have shown an association between sugar-sweetened beverages and the incidence of obesity in children. However, in another study, again in children, there was no linear relationship between consumption of sweetened beverages and body mass index (BMI) or energy intake\(^1\). The notion that liquid calories are not perceived by the body rests on inconclusive evidence. In a review by Almiron-Roig\(^2\) some studies showed that liquids were less satiating than were solids, whereas other studies showed the exact opposite.

In one study, jelly beans led to energy compensation at a subsequent meal (indicating that they were satiating), but beverages did not. In contrast, in another study, cookies and cola midmorning had identical effects on hunger ratings and energy intakes at lunch.

In another study orange juice, caloric cola and 1% fat milk had identical effects on hunger, fullness and desire to eat and were thus equally satiating.

In conclusion, the effects of soft drinks, both those containing sugar and those containing none, on appetite and overall energy intake are extremely complex. Evidence of a link between soft drinks and obesity or weight gain is equivocal. It looks like the human ability to compensate for extra calories is poor in general. It is not appropriate to conclude that soft drinks are a major cause of obesity. Further research is needed to clarify this situation.

I. S.

Evidence of a link between soft drinks and obesity or weight gain is equivocal.


\(^2\) Almiron-Roig E, Drewnowski A. Hunger, thirst and energy intakes following consumption of caloric beverages. Physiology and Behavior 2003: 79: 767-73
Some people experience a feeling of weakness, irritability, nausea, sweating, trembling and anxiety, which comes on a few hours after a meal rich in carbohydrates, particularly simple carbohydrates. It is regularly attributed, by individuals suffering from this discomfort, to a fall in the blood glucose level. But for these same individuals sugar is also a means of overcoming these unpleasant feelings. Putting forward a diagnosis of hypoglycaemia can perpetuate an ambiguous attitude towards sugar, consisting in rejection of the “forbidden” food but dependence on sugar as saviour. What is the case in reality? Is there really a low blood glucose level (“hypoglycaemia”) concomitant with the symptoms described by patients?

Early studies failed to find any evidence of low blood glucose levels in subjects when reporting symptoms within four hours following a meal. In 1989, a study by Palardy confirmed the lack of correspondence between observed blood glucose levels and the reported symptoms. A fall in the glucose level was observed in only 6% of cases. Furthermore, in 4% of cases discomfort arose when the glucose level was normal. These studies did not, therefore, bring to light any significant correlation between blood glucose level and the onset of symptoms.

More recently however, a study by E.J. Simpson and colleagues suggested the existence of slightly lowered blood glucose levels in women experiencing symptoms more than once a week which they attributed to a fall in hypoglycaemia. During the 14 days of the study, 108 events with symptoms occurred. Only 13% of the measured blood glucose levels were equal to or less than the standard threshold used to define hypoglycaemia (3 mmol/l). But the blood glucose levels at the time of symptom were lower than non-symptomatic individuals at the same time period after meals. None of these studies has shown any link between sugar consumption and subsequent hypoglycaemia.

It also seems that the symptoms attributed to a fall in blood glucose level may be related to states of anxiety or hunger.

All the work carried out over the last 30 years does not therefore point to a link between the appearance of symptoms of “postprandial hypoglycaemia” and abnormally low blood glucose levels. Nor does any of this work support the myth that subsequent hypoglycaemia is linked to the ingestion of simple sugars. It may be that some individuals experience symptoms when their blood glucose is at a low level, despite this level being within the normal range for a healthy person. But this is not attributable to the consumption of sugar or any other carbohydrate. Indeed, the simple solution to the problem, for these individuals, is to regularly consume carbohydrates, including sugar.

M.-S. B.


2. Simpson EJ., Holdsworth M., Macdonald IA. Ambulatory blood glucose measurement, dietary composition and physical activity levels in otherwise healthy women reporting symptoms that they attribute to hypoglycaemia. British Journal of Nutrition 2006, 95, 1127-33

Postprandial hypoglycaemia: myth or reality?

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