No Justification in Restricting Sugar Consumption when Prescribing a Weight-reducing Diet

The team of J.A. WEST and A.E. de LOOY of Queen Margaret University College Edinburgh compared the response by overweight individuals (20 – 60 years old) to an energy-reduced diet in which sucrose represented either 5 % or 10 % of total calorie intake.

The calorie deficit for each of the two diets was 600 Kcal/day, with fats representing 33 % of total energy intake. During the study, individual BMI and consumption were measured in the 2nd, 4th and 8th weeks.

THE PRESENCE OF SUCROSE IN THE DIET DOES NOT LIMIT WEIGHT LOSS

Over the 8 weeks of the study, a significant weight loss was recorded for both diets: the 10 % sugar diet and the 5 % sugar diet led to a weight loss of 3 kg and 2.2 kg respectively (non-significant difference). After 8 weeks, the average BMI fell from 29.2 to 28.2 (5 % sugar diet) and from 30.1 to 28.8 (10 % sugar diet).

Analysis of the subject’s dietary records reveals that consumption of fats is lower in the case of the 10 % sugar diet. These results confirm the sugar-fat seesaw relationship: a reduction in sucrose consumption is accompanied by an increase in fat consumption and vice versa.

The subjects indicated that low-fat diets rich in starchy carbohydrates are bulky and monotonous. The presence of sucrose makes these low-fat diets more palatable and thus ensures better compliance with the diet.

NO SIGN OF A REDUCTION IN MICRONUTRIENTS WITH THE 10 % SUCROSE DIET

The micronutrient intake (expressed in absolute terms) varied little over the 8 weeks of the study. A comparison between the two diets revealed an increase in vitamin C intake with the 10 % sugar diet. It is important to note the absence of any appreciable deficit in micronutrient intake among subjects on the 10 % sugar diet, since this point has been the subject of numerous debates.

Some authors have suggested that there might be a reduction in micronutrient density in diets in which sucrose accounts for a substantial proportion of total energy intake. For them, subjects on a low-calorie diet constituted a risk group.

The results obtained by Bolton-Smith and Woodward do not confirm this hypothesis. Out of a general population sample of 11,600 Scottish adults, the authors report that the lowest levels of micronutrient intake were among both the lowest (20 %) and highest (20 %) consumers of added sugar. On the other hand, micronutrient intakes were highest in diets in which added sugar consumption was intermediate (medi-an 20 %). Gibson analysed the diets of 2,705 adolescents. The calcium and riboflavin (vitamin B2) intake was positively correlated to sucrose consumption, with iron and nicotinic acid (vitamin B3) intake being negatively correlated. No correlation appeared for thiamine (vitamin B1) or vitamins A and C.

HOW TO loose weight and preserve nutritional status

The objective of the WEST and de LOOY work was to compare the response among overweight individuals to a diet comprising a reduction in calorie intake coupled with variable sugar intakes. The results show that the 10 % sugar diet leads to no reduction in the micronutrient intake and ensures better compliance with the diet. The authors therefore conclude that there is no justification for reducing sucrose consumption when prescribing weight-reducing diets.

References

M.S.B.

FORTHCOMING EVENTS

The Columbia University Seminar on Appetitive Behaviour
24 January 2002
Columbia University, USA
Contact : Dr. Harry Kissilev
E-mail : hrk2@columbia.edu

42e Journée annuelle de nutrition et de diététique
25 January 2002
Paris, France
Contact : Marie-France Carrié-Moyal
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Fax : +33 1 44 05 13 37

Functional Foods 2002
5 – 7 March 2002
The Hague, Netherlands
Contact : Fiona Angus
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8th Seminar of the European Nutrition Leadership Programme
7 – 14 March 2002
Luxembourg
Contact : Mrs. L. Duym-Brookman, Wageningen University
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Europeans in common with the citizens of other developed communities now have better life expectancy than before. However, that does not mean that there are not health problems and increasing incidence of overweight is one of them. We are fortunate to have a wide choice of food and drink available to us but while what we eat and drink is extremely important for our health it is not the only factor. It is now clear that exercise is also highly important. A situation of plenty is not an excuse for abuse and each of us should try to have a varied and balanced diet combined with a lifestyle that includes some physical activity. Sugar is a carbohydrate which encourages variety by bringing taste and flavour to the diet. A growing number of scientific studies also show that it helps long term weight control by diminishing fat intake and contributing satiety as well as palatability in our diet.

G.S.

At Last
Good News on Diabetes

The rapid world-wide rise in the number of people suffering from type 2 diabetes is associated with an even more pronounced increase in the number of people who are grossly overweight. Indeed, diabetes is the most common serious medical complication to arise in those who are obese (figure 1). Until recently the inexorable rise in these two conditions seemed unstoppable. But a number of research studies now provide hope that there may be practicable approaches to the avoidance of diabetes even if the solution to the pandemic of obesity still seems elusive.

A SLIPPERY SLOPE

The typical medical picture of a patient when first diagnosed with type 2 diabetes is of a sedentary middle-aged adult, significantly over-weight, who is eating a high-fat diet. All too often their first realisation that anything is seriously wrong is when they suffer a common consequence of the disease — a heart attack. Early symptoms of diabetes (persistent thirst, frequent urination, mild blurring of vision) are easily overlooked for months or even years. But simple medical tests can pick up the beginnings of the problem before any symptoms appear.
EASY CHANGES AND DIFFICULT CHANGES

This study is also revealing in another way. It provides a fascinating insight into a long-standing debate among health professionals as to which lifestyle changes people will accept, even when they know the serious consequences of failing to make some changes. Only 43% of the intervention group succeeded in losing as little as 5% of their body weight in the first year of the study. Slightly more (47%) were found to have reduced their fat intake to 30% calories (although, interestingly, twice this number thought they had). Only a quarter of the subjects met the saturated fat or fibre targets. But almost all (86%) managed over 4 hours of moderate exercise per week (table 1).

Success in Achieving the Goals of the Intervention by One Year

<table>
<thead>
<tr>
<th>Goal</th>
<th>Intervention Group % of subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight reduction &gt; 5%</td>
<td>43</td>
</tr>
<tr>
<td>Fat intake &lt; 30% energy intake</td>
<td>47</td>
</tr>
<tr>
<td>Saturated fat intake &lt; 10% energy intake</td>
<td>26</td>
</tr>
<tr>
<td>Fibre intake ≥ 15 g/1000 kcal</td>
<td>25</td>
</tr>
<tr>
<td>Exercise &gt; 4 hr/wk</td>
<td>86</td>
</tr>
</tbody>
</table>

This study thus makes it clear that people are much more willing to add some exercise to their lives than to change their diets in a way that seems minor to health professionals but is clearly major to ordinary people. A detailed analysis of the reduction in risk from partial compliance with the five changes advocated is also very encouraging (figure 2). Those subjects who only achieved one of the five goals (and most of these will have only succeeded in achieving the increase in exercise) reduced their risk of developing diabetes by more than half. Further reductions in risk accompanied each additional goal achieved, so than those who managed more that three had virtually zero risk.

CONCLUSIONS

This intervention study has confirmed that exercise, weight reduction and dietary fat reduction are the cornerstones of effective prevention of diabetes. But it has also shown that merely increasing exercise levels is a readily achievable goal for people, who are significantly overweight, and this alone will confer most of the benefits seen from more intrusive lifestyle changes.
WHAT IS DIABETES?

Many foods lead to the release of glucose into the bloodstream soon after they are consumed. Bread, rice and pasta contain starch, which is broken down to glucose during digestion. Fruits, vegetables, jams, fruit juices and soft drinks are all sources of the sugars glucose and sucrose, and also yield glucose after digestion.

Insulin is a hormone that is released from the pancreas to signal the body to alter its metabolism in order to limit any rise in blood levels of glucose and to use up the glucose within the body.

Diabetes is a condition that is characterised by a failure of the body to regulate blood glucose levels correctly. The two common forms of the condition are labelled "Type 1" and "Type 2".

In **Type 1 diabetes** the body fails to produce insulin. After a drink or a meal that yields glucose in the blood, glucose concentrations may rise to dangerous levels unless the patient receives regular injections of insulin. This form of diabetes often starts in childhood and is thought to be triggered by an autoimmune reaction following a virus infection. In the past type 1 diabetes has been called "insulin dependent diabetes" but this term has been discarded to avoid confusion (see below).

**Type 2 diabetes** used to be called "non-insulin dependent" or "adult onset" diabetes, but both of these names are now considered unhelpful. It is now increasingly seen in children and, although sufferers do not usually need insulin injections at first, they often need them as time goes on. In Type 2 diabetes the body may produce more insulin than normal but it cannot use the insulin which is available effectively. The characteristic of this form of diabetes is that the body is resistant to the effects of insulin. Thus blood glucose control is compromised but injections of more insulin have little effect. Unfortunately, with time, patients often find that insulin production by the pancreas begins to fail, making blood glucose control even more unreliable.

The main cause of insulin resistance, and thus of Type 2 diabetes, is obesity. In the early stages the condition can often be completely resolved by weight loss. Physical exercise also seems to reduce the risk of developing the condition and to help in treating it.

In both these forms of diabetes, poor blood glucose control is not the only metabolic disturbance. Importantly, fat metabolism is also affected, leading to an increased risk of coronary heart disease. Thus dietary advice to diabetic patients must emphasise restricting fat (especially saturated fat) intake but ensuring adequate food energy consumption except during active attempts to lose weight). High intakes of both protein and alcohol are not recommended (for other reasons) leaving only carbohydrate as a staple source of calories. In order to limit the rises in blood glucose that would otherwise result from the consumption of carbohydrates by diabetics, the bulk of these should be of low and moderate Glycaemic Index (European Association for the Study of Diabetes, 2000).

This study does not support the hypothesis that limiting sugar or high-glycaemic foods has any role in the prevention of diabetes.

R.C.

**References**: