



FACT SHEET: Role of dietary fats in the prevention and treatment of the metabolic syndrome forum – speaker highlights

The rise of obesity globally

- The number of obesity cases globally is rising considerably. This is due to energy imbalance, caused by a combination of an increased intake of energy-dense foods coupled with a decrease in physical activity
- According to the World Health Organisation (<http://www.who.int/mediacentre/factsheets/fs317/en/index.html>):
 - *Worldwide obesity has nearly doubled since 1980*
 - *In 2008, globally more than 1.4 billion adults, 20 and older, were overweight. Of these over 200 million men and nearly 300 million women were obese*
 - *More than 40 million children under the age of five were overweight in 2011*
- The number of cases of type-2 diabetes is also rising, according to the International Diabetes Federation (http://www.idf.org/sites/default/files/5E_IDFAtlasPoster_2012_EN.pdf):
 - *8.3% of adults worldwide have diabetes (2012)*
 - *And it is projected by 2030, one in 10 adults will have diabetes*

Metabolic syndrome

- Metabolic syndrome applies to a group of risk factors that increase risk of heart disease, diabetes, stroke and other diseases that may result from excess body fat, especially abdominal fat
- People that have metabolic syndrome are five times at risk of developing diabetes as is someone who does not have the syndrome
- It is widely agreed that the first line of treatment for metabolic syndrome is a focus on weight loss and lifestyle changes

Current dietary recommendations regarding fat

- It is essential to eat a variety of foods
- A common misunderstanding is to cut all fat from diets – when actually you need some fats for a healthy diet
- Choosing the right fats is important for healthy cholesterol and your heart
- International advisory bodies recommend to limit intake of saturated fats (maximum 7-10 % daily energy) and trans fats (maximum 0-1% daily energy). These fats are found in foods such as dairy products (butter, cream, cheese), fatty red meats (such as sausages, salami, fatty beef cuts), fatty snacks (including cake, pastries and chips), and certain vegetable oils (palm oil and coconut oil) (*Dietary guidelines for Americans 2010*)
- Switch to unsaturated fats - both monounsaturated (MUFA) and polyunsaturated (PUFA) fatty acids - found in foods like vegetable oils (e.g. soyabean oil, canola/rapeseed oil,



sunflower oil, olive oil), fatty or oily fish, nuts, seeds and products made from all of these (e.g. soft margarines and mayonnaise and derived products).

Today's symposium: Role of dietary fats in the prevention and treatment of the metabolic syndrome

- Current recommendations are set because there is consistent scientific evidence that replacing saturated fats by (poly) unsaturated fats helps to maintain healthy cholesterol which is a well-recognised risk factor for coronary heart disease
- Today's panel of experts aim to discuss whether such recommendations also apply in the context of obesity and diabetes
- Specifically the panel will put the spotlight on:
 - *Current treatment for the metabolic syndrome focuses on weight loss - and suggestions to eat low fat. The panel will explore where does the science behind this actually stands*
 - *Current treatment for the metabolic syndrome in terms of fat quality is the same as for the general population - mostly based on the impact on cardiovascular health – the panel will explore whether new evidence points to a more specific recommendation for those with metabolic syndrome*

Today's panellists and top-line views

Professor Susan Jebb

Professor of Diet and Population Health, Department of Primary Care Health Sciences, University of Oxford, UK

- Are all calories equal? To control our weight should we limit all calories, or focus specifically on the ones coming from fat? For many years this question has been a contentious issue
- Professor Jebb reviews a meta-analysis suggesting that reducing the fat content of the diet is associated with a lower body weight – implying this may be an effective strategy to prevent weight gain
- However, data from pragmatic weight loss trials often shows that success does not only depend on the macronutrient content of the diet and the proportion of fat or carbohydrate
- Professor Jebb explores the theory that maybe the impact of calories from fat on weight control are linked to broader dietary patterns rather than just the percentage of energy they bring and that behavioural factors also play a crucial role in successful weight control
- Despite this academic debate, it is vital that a clear message reaches consumers. Ultimately, any dietary strategy to prevent or treat obesity must address total energy intake and not just fat content and must also acknowledge the importance of diet quality, including the fatty acid composition of the diet to maximise the wider health benefits

Doctor Ulf Riserus



Department of Public Health and Caring Sciences, Clinical Nutrition and Metabolism, Uppsala University, Sweden

- With a growing number of diabetes cases globally, the role of dietary fat quality in the development of obesity and insulin resistance is an area where scientific knowledge is still limited, and we need to know more
- Doctor Riserus explains that animal studies show potential mechanisms for a specific role of certain fats: eating saturated fats could increase the cells storing fat in our body and their maturation
- Whether this actually happens in humans is still uncertain and more research is needed. However some recent observational and intervention studies suggest distinct effects of different fatty acids on abdominal fat accumulation: polyunsaturated fats (PUFA) may result in less fat storage compared to saturated fats. This is in line with other research showing that PUFA (mainly omega – 6) slightly improves insulin sensitivity in humans
- The data on monounsaturated fat (MUFA) versus saturated fat are inconsistent with regards to influence on insulin sensitivity, but some data indicates a small beneficial effect of replacing saturated fat with MUFA
- This suggestive data indicates that dietary fat quality might not be only important to prevent cardiovascular disease, but also to control metabolic syndrome It will be essential to gain more knowledge in this field to recommend the best diets for consumers to minimize abdominal fat and fat accumulation on vital organs such as the liver, which in turn may help prevent obesity and its related metabolic disorders (including insulin resistance and diabetes)

Professor Berthold Koletzko

Dr med habil (MD PhD) Div. Metabolic and Nutritional Medicine, Dr. von Hauner Children's Hospital Ludwig-Maximilians-University of Munich, Germany

- Nutrition during pregnancy, lactation and early childhood has a great influence on the long-term risk of obesity and associated metabolic disorders, including insulin resistance and diabetes for humans
- Professor Koletzko explores how pre- and postnatal feeding with different types of fats increases a child's risk of obesity and associated disorders such as diabetes
- It has been hypothesised that perinatal dietary fat quality matters – for example , a high intake of n-6 polyunsaturated fatty acids (PUFA) and a high n-6/n-3 PUFA ratio might contribute to obesity in children
- However current animal and human data does not provide conclusive evidence for untoward effects of a high pre- and postnatal n-6 PUFA intake, or a high n-6/n-3 PUFA ratio, on offspring obesity. Therefore this does not justify changing current recommendations on dietary fat quality in pregnancy, lactation and infancy: current consensus recommendation is that pregnant and lactating women should aim to achieve adequate intakes of the parent essential PUFA LA and ALA as well as an average DHA intake of at least 200 mg/day. This can usually be reached with one or two portions of fish per week (if fatty fish is included). For infants, DHA supply (100 mg/day) should persist after breastfeeding for up to 2 years
- With more than 40 million children under the age of five being overweight in 2011 (and this number rising) it is important to do more conclusive research in this area to really determine the risk as parents we are putting on our children before they are even born

Jennifer A. Fleming, MS, RD, LDN



Department of Nutritional Sciences, The Pennsylvania State University, USA

- Jennifer Fleming presents the case that short term weight loss maybe achieved with either a low fat diet or a diet low in carbohydrates. Neither of the two diets is markedly superior, the greatest factor in achieving successful weight loss is dietary adherence
- Individuals with insulin resistance/ metabolic syndrome adhere better to a reduced carbohydrate diet. Reduced carbohydrate diets are associated with greater improvement in components of metabolic syndrome beyond weight loss
- Thus, a low carbohydrate diet has proven more successful than a low fat diet in individuals with metabolic syndrome
- There is emerging evidence to support the recommendation to use unsaturated fats (MUFA and PUFA) in place of carbohydrates particularly for individuals with metabolic syndrome.
- Dietary patterns that promote moderate macronutrient composition promote greater long term adherence. Beyond macronutrient composition, any diet should consist of nutrient dense foods
- The recommendation of a moderate fat diet is a paradigm shift from a low fat/reduced fat message, which has been a long-standing dietary recommendation for the reduction of chronic diseases
- More research needs to be done to give consumers the best advice based on their individual metabolic needs

If you have any further questions on today's panel, please contact:

Connie Diekman: connie_diekman@wustl.edu