You are what your mother eats
High GI diets may give obese kids

By Stephen Daniells, 15-Apr-2009

Snacking on foods with a high glycaemic index like white bread and chocolate during the later stages of pregnancy may increase the likelihood of obesity in the offspring, says a new study.

High GI snack diets during the third trimester of pregnancy were associated with heavier birth weight in the offspring, and a higher rate of growth of the new-borns, suggests new research with sheep published in the British Journal of Obstetrics and Gynaecology.

According to the scientists from University College Dublin, and the National Maternity Hospital in Dublin, sheep share many elements of pregnancy with the human model including metabolic function and nutrient transport.

"To our knowledge, there have been no previous animal studies carried out to investigate the effect of short duration high glycaemic intakes in the third trimester of pregnancy and its effects on offspring birth weight and growth rates," wrote the researchers, led by Professor Alex Evans.

"Our study shows for the first time, in a sheep model, that this resulted in an increased birth weight, basal plasma glucose concentrations and a faster postnatal growth rate in the offspring."

Childhood obesity

The International Association for the Study of Obesity estimated in 2006 that the number of obese school age children in Europe increased by almost 50 per cents since the late 1990s. The association projected that as many as 6. 4m European kids could be obese by 2010.

The number who are overweight is expected to grow by 1.3 million a year to a total of 26 million across the EU in four years, more than one-third of the child population, the (IASO) says.

Much of the work towards combating childhood obesity to date has centred on the food eaten by children, as well as marketing and availability of less wholesome products, and parental choices. If the results of the new study also hold for humans, they could move the debate forward a step, towards the diet of mothers themselves.

Study details

Sheep have been used as models to investigate maternal-foetal interactions in humans for over four decades because the animals have a body weight similar to humans (65 to 85 kg), a 17 day reproductive cycle, and usually one or two lambs per pregnancy with a relatively long gestation period of 147 days.

Evans and his co-workers followed 104 ewes on their first day of their last trimester of gestation and randomly assigned them to receive either 100 ml of propylene glycol (high glycaemic meals) or 100 ml of water twice a day until the birth of their lambs. The lambs were them followed until they reached 40 kg in weight.

The researchers report that lambs born to mothers fed the propylene glycol had higher birth weights (an average of 200 grams heavier), higher blood sugar levels, and reached 40 kg in weight almost 20 days earlier than lambs born to ewes in the water control group.

"Our findings show that maternal hyperglycaemia stimulates the production of insulin and suggest that this has a positive effect on foetal growth," explained Evans. "Changing the source and pattern of intake of maternal dietary carbohydrate may help reduce maternal and foetal trauma at parturition and reduce the risk of obesity related diseases among offspring in later life."

GI

GI as a nutrition concept rose to prominence in the wake of the low-carb dieting fad that peaked and ebbed in 2002 and 2003. GI, or 'slow carb' as it has been named, promises a more reasoned approach to carbohydrate intake, ranking foods by how quickly they release their sugars into the bloodstream.

Low-GI foods are generally those that are low in carbohydrates or consist of long-chain carbohydrates like whole grains and therefore more slowly release their sugars, causing, in theory, a greater feeling of satiety.

Many European countries, most notably the UK, have embraced the low-GI idea, with GI products and labelling schemes in place alerting consumers to low- and medium-GI foods.

Source: BJOG: An International Journal of Obstetrics & Gynaecology Published online ahead of print, Early View, doi: 10.1111/j.1471-0528.2009.02149.x "Transient high glycaemic intake in the last trimester of pregnancy increases offspring birthweight and postnatal growth rate in sheep: a randomised control trial" Authors: N.A. Smith, F.M. McAuliffe, K. Quinn, P. Lonergan, A.C.O. Evans