

# Diabetes research news

## Study uncovers new diabetes genes

Twelve new genes linked with type 2 diabetes have been found in a study into the differences in people's DNA and their risk of having the condition.

A consortium including Edinburgh University scientists have identified 'important clues to the biological basis of type 2 diabetes'. It is hoped the findings will lead to better ways of treating the condition.

The genes tend to be involved in working cells producing insulin, which control levels of glucose in blood. The 12 new genes brings the total number linked with type 2 diabetes to 38.

The study was led by researchers at Oxford University and forms part of the Wellcome Trust case control consortium. The group of researchers, from across the UK, Europe, USA, and Canada, compared the DNA of more than 8000 people with type 2 diabetes with almost 40 000 people without the condition. They then checked the genetic variations they found in another group including over 34 000 people with diabetes and almost 60 000 controls.

Dr Jim Wilson, of Edinburgh University, said, 'One very interesting finding is that the diabetes susceptibility genes also contain variants that increase the risk of unrelated diseases, including skin and prostate cancer, coronary heart disease, and high cholesterol.'

## Vitamins do not reduce pre-eclampsia risk in women with diabetes

Taking vitamins C and E does not lower the risk of pre-eclampsia in women with type 1 diabetes, a study published in the *Lancet* and presented at the American Diabetes Association meeting in Florida, USA has found. However, these vitamins may help prevent the condition in those women low in antioxidants.

Pre-eclampsia can threaten the lives of mother and baby, but its causes are not known. After a small trial in 1999 suggested that vitamins C and E, which are antioxidants, might prevent the condition, researchers have been investigating their role. Several subsequent larger trials found no benefit of vitamin C and E supplementation during pregnancy.

In this new research, the Diabetes and Pre-Eclampsia Intervention Trial (DAPIT) study group looked at women with type 1 diabetes, a condition that puts them at risk of pre-eclampsia and preterm delivery. Type 1 diabetes is associated with a reduction in antioxidants, so the team looked to see whether vitamins C and E could improve outcomes in women with diabetes.

The researchers examined the benefits of 1000 mg of vitamin C and 400 IU of vitamin E in 762 pregnant women with type 1 diabetes, recruited from 25 UK antenatal clinics. Women were randomly assigned to receive vitamins or placebo every day from between 8 and 22 weeks until delivery.

The rate of pre-eclampsia was similar in both groups

(15% of women receiving vitamins vs 19% of controls). However, in women with low levels of antioxidants at the start of the study, taking vitamins was associated with a significantly lower risk of pre-eclampsia.

The authors suggest that the vitamins might be being given too late in pregnancy to affect the pathway by which pre-eclampsia occurs. They also say that individual vitamin supplements may not carry the benefits of, for example, a diet high in antioxidant fruit and vegetables. They conclude, 'In principle, the notion that oxidative stress is implicated in pathogenesis of pre-eclampsia remains plausible, but the benefit of vitamin supplementation might be limited to women with vitamin depletion; however, this idea needs confirmation.'

Contrary to previous research, this study showed no evidence that vitamin C and E supplements cause harm to mothers or babies. Antioxidant vitamins tended to reduce the risk of having a low-birthweight baby (6% for the vitamin group vs 10% for controls). Additionally, fewer babies were born early to women taking vitamin C.

## Babies' genetic link to diabetes

A genetic link between low birth weight and the development of adulthood diabetes has been found, according to an international study.

The researchers claim it helps explain why small babies go on to have higher rates of type 2 diabetes as adults. They said the findings would help target efforts to prevent the disease.

The team analysed 38 000 Europeans involved in 19 pregnancy and birth studies. The fact that lower weight babies are more at risk of developing type 2 diabetes as adults was already known. But much of the existing research has focussed on environmental factors, such as the effect the mother's prenatal diet can have on the growth of her baby, rather than genetic ones.

Dr Rachel Freathy, from the UK's Peninsula Medical School in Exeter, said, 'It is now important for us to establish how much of the association is due to our genes and how much is due to the environment, because this will inform how we target efforts to prevent the disease.'

It was recently found that babies who inherit a certain genetic variant in a gene called ADCY5 are at a 25% higher risk of future diabetes than babies who do not inherit it. This latest study shows that the babies who inherit the genetic variant also weigh less at birth.

Mark McCarthy, from the University of Oxford, said, 'It was a surprise to see such strong genetic effects for a characteristic, such as birth weight... these discoveries provide important clues to the mechanisms responsible for the control of growth in early life and may lead us to a better understanding of how to manage growth problems during pregnancy.'