

Genetic link to vitamin A deficiency

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(PhysOrg.com) -- Almost half of UK women may be lacking an important source of vitamin A due to a previously undiscovered genetic variation, scientists at Newcastle University have found.

The team, led by Dr Georg Lietz, has shown that almost 50 per cent of women have a genetic variation which reduces their ability to produce sufficient amounts of [vitamin A](#) from beta-carotene.

Vitamin A - also known as retinol - plays a vital role in strengthening our immune system, protecting us against common infections such as flu and winter [vomiting](#). Vitamin A also helps to maintain healthy skin and mucus linings such as inside the nose and the lungs.

In 1987, an American study found that excessive use of vitamin A during [pregnancy](#) was associated with certain birth defects. Beta-carotene, however, was deemed to be safe and this led to the general advice that we should eat more of this nutrient, allowing the body to convert what it needs into vitamin A.

However, Dr Lietz' latest research - published in the [FASEB Journal](#) and presented this month at the 2nd Hohenheim Nutrition Conference in Stuttgart - shows that for many women, beta-carotene is not an effective substitute for vitamin A.

Dr Lietz explained: "Vitamin A is incredibly important - particularly at this time of year when we are all trying to fight off the winter colds and flu.

“It boosts our [immune system](#) and reduces the risk of inflammation such as that associated with chest infections.

“What our research shows is that many women are simply not getting enough of this vital nutrient because their bodies are not able to convert the beta-carotene.”

From a volunteer group of 62 women, the team found that 29 of them - 47 per cent - carried the genetic variation which prevented them from being able to effectively convert beta-carotene into vitamin A.

The study also showed that all volunteers consumed only about a third of their recommended intake from ‘preformed’ vitamin A - the form found in products such as eggs and milk - indicating that those volunteers carrying the genetic variation were not eating enough vitamin A-rich foods to reach the optimum level their body required to function.

“Worryingly, younger women are at particular risk,” explained Dr Lietz, who is based in the School of Agriculture, Food and Rural Development at Newcastle University.

“The older generations tend to eat more eggs, milk and liver which are naturally rich in vitamin A whereas the health-conscious youngsters on low-fat diets are relying heavily on the beta-carotene form of the nutrient.”

The next step in the study is to assess whether the effect of the [genetic variation](#) can also be observed in men and whether our body composition will influence our ability to absorb and convert beta-carotene into vitamin A.

More information: “Two common single nucleotide polymorphisms in the gene encoding beta-carotene 15,15’-monooxygenase alter beta-

carotene metabolism in female volunteers'. Georg Lietz et al, The FASEB Journal. [DOI: 10.1096/fj.08-121962](https://doi.org/10.1096/fj.08-121962)

Provided by Newcastle University

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