



BASF Study performed by BioTeSys GmbH provides interesting results Expectant mothers may be at risk of vitamin A deficiency

Esslingen, 12.12.2006 - Women expecting twins or their second child inside two years are at an increased risk of vitamin A deficiency and could benefit from beta-carotene supplementation, says a study based in Germany. The new study, funded by BASF, looked at vitamin A and beta-carotene status in the serum, cord blood and colostrums (breast milk produced during the last few days of pregnancy and first few days after birth) in 23 women with high socio-economic status giving birth for the second time inside two years, and six women expecting twins.

The researchers behind the new study, from BioTeSys GmbH, the University Gynaecological Hospital Ulm, and the University of Hohenheim, report that only four of the 29 women studied had recommended vitamin A intakes during breastfeeding.

"This work is important since it shows that suboptimal vitamin A supply (and risk of vitamin A deficiency) is not only a problem in developing countries but also occurs in western populations (here: example Germany)," lead author Christiane Schulz from BioTeSys GmbH told NutraIngredients.com.

"We need appropriate tools for the identification of risk groups. If identified, supplementation recommendations need to be derived," she said.

Vitamin A deficiency (VAD) is a public health problem in more than 50 per cent of all countries, especially in Africa and South-East Asia, according to the World Health Organisation, and causes blindness in up to 500,000 children each year.

Vitamin A during pregnancy is essential for the development of lungs in the foetus and foetal maturation, but vitamin A-rich foods such as liver are discouraged because very high levels are presumed to lead to birth defects. Therefore, consumption of provitamin A (i.e. beta-carotene) is encouraged in order to avoid excess intake of vitamin A and the resulting negative health implications.

"It is important that beta-carotene is contained in pregnant women's daily diet, either from beta-carotene-rich vegetables or from functional foods which have been fortified with beta-carotene," said Schulz.

The study, published in the European Journal of Nutrition, reports that 75 per cent of the women did not have the recommended daily intakes of 1.1 milligrams of vitamin A equivalents during pregnancy, based on food frequency questionnaire quantification of intakes. During breastfeeding, 68 per cent still failed to meet the requirements.

Analysis of plasma levels of retinol (vitamin A) showed

that 28 per cent of the women had levels below 1.4 micromoles per litre, meaning that these women were borderline deficient.

Moreover, 46 per cent of the women failed to even consume two-thirds that of the RDA for retinol.

"This is a surprisingly high percentage of women at risk, particularly in light of the moderate to high socio-economic status and good nutritional status in this group of apparently healthy women," wrote the researchers.

The total carotenoid intake was relatively high (average 6.9 milligrams per day), but one-fifth of the women still had relatively low beta-carotene levels (less than 0.5 micromoles per litre).

"Despite the fact that vitamin A and beta-carotene-rich food is generally available, risk groups for low vitamin A supply exist in the western world," said the researchers.

The risk groups are not limited to giving birth for the second time inside two years, and six women expecting twins, said Schulz, but that other groups potentially at risk include vegetarians, especially vegans, as vitamin A is only present in food of animal origin, she said, as well as the elderly with advanced age.

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"Vitamin A and beta-carotene supply of women with Gemini or short birth intervals"

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Über BioTeSys GmbH:

BioTeSys GmbH in Esslingen (www.biotesys.de) was founded in 1999 and is a spin-off of the Institute for Biological Chemistry and Nutritional Sciences at the University of Hohenheim. BioTeSys is a partner for development and conversion of new concepts in the areas cosmetics, food, and pharmaceuticals (OTC). The spectrum covers screening procedures for the collection of the bioactive potential of substances or substance mixtures, in vitro testing using single cell cultures, co-cultures and different organ models as well as clinical studies. The department of analytics which focuses on HPLC and photometry, is accredited to DIN EN ISO/IEC 17025. All analytical procedures and test parameters used are based, developed and optimised according to physiological guidelines. The results and raised property concentrations therefore denote a direct significance for the estimated biological effects.

As complete service provider in the area of the biological and chemical analysis, the company offers extensive services including the development of new procedures and products for the customer.