Health News from 3Care Therapeutics

DHA May Boost Male Fertility

Mice engineered to lack a gene that codes for an enzyme that helps them produce DHA were found to have fewer sperm and more abnormalities in what little sperm they did have, but such effects were reversed in mice fed DHA, researchers from the University of Illinois report in the *Journal of Lipid Research*. *"It was very striking. When we fed the mice DHA, all these abnormalities were prevented,"* said lead researcher Dr Manabu Nakamura.

If additional research backs up the animal data, it may see fertility added to the long list of potential benefits of omega-3 fatty acids, including improved heart health, cognitive function, mood and behavior, eyes and joint health, and potentially reducing the risk of some kinds of cancer. *"We get hints from looking at sperm in the DHA-deficient animals about what type of pathology we may be looking at and why these polyunsaturated fatty acids are important. But we're still at the starting point in understanding the mechanisms that are involved, and we need to do more research at the cellular level,"* cautioned Nakamura.

This is not the first time omega-3 fatty acids have been linked to sperm quality and fertility: An Iranian study reported earlier this year indicated that infertile men have lower levels of omega-3 fatty acids in their sperm than fertile men. The study included 150 men and was published in the peer-reviewed journal *Clinical Nutrition* (February 2010, Vol. 29, pp. 100-105).

For the mouse study, Nakamura and his co-workers engineered mice to lack a gene which codes for the delta-6-desaturase enzyme, which is involved in the transformation of the plant-source omega-3 alpha-linolenic acid to more active forms such as DHA. Without the enzyme the mice are unable to synthesize DHA. *"In the absence of DHA, male mice are basically infertile, producing few if any misshaped sperm that can't get where they need to go,"* said Nakamura.

When mice were fed a diet supplements with 0.2 per cent DHA, however, the researchers noted that the fatty acid was *"capable of restoring all observed impairment in male reproduction"*. The researchers confirmed that they would continue to investigate how omega-3s affect fertility. It may be some time before fish oils are recommended to help boost male fertility.

Journal of Lipid Research Volume 51, Pages 360-367
*"Docosahexaenoic acid supplementation fully restores fertility and spermatogenesis in male delta-6 desaturase-null mice"*Authors: M. Roqueta-Rivera, C.K. Stroud, W.M. Haschek, S.J. Akare, M. Segre, R.S. Brush, M.-P. Agbaga, R.E. Anderson, R.A. Hess, M.T. Nakamura

Omega-3 May Improve Diabetic Kidney Health

Increased intakes of omega-3 fatty acids may reduce kidney damage in type-1 diabetics, without impacting the incidence of the condition, says a new study.

Kidney function was improved in type-1 diabetics with the highest average intake of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), compared with people with the lower intakes of the fatty acids, according to findings published in *Diabetes Care*.

The results are based on data from 1,436 participants in the Diabetes Control and Complications Trial – a trial including people aged between 13 and 39 and funded by the National Institute of Diabetes and Digestive and Kidney Diseases.

The researchers, led by Dr Amanda Adler from the MRC Epidemiology Unit at the Institute of Metabolic Science in Cambridge, England measured the excretion of the protein albumin in urine. Albumin is the most abundant protein in human serum and in people with kidney problems the protein leaks from the kidney into the urine. A level of 30 mg per 24 hours is reportedly representative of sufficient function.

According to the results, people with a higher average intake of omega-3s had albumin excretion levels 22.7 mg per 24 hours lower than people with the lowest average intakes of omega-3.

"Dietary omege-3 long-chain polyunsaturated fatty acids appear inversely associated with the degree, but not with the incidence of albuminuria in type-1 diabetes," wrote Dr Adler and her co-workers. "These findings require further investigation in prospective studies."

Omega-3 and Type-2 Diabetes

Results of a double-blind placebo-controlled trial from Hong Kong published earlier this year suggested that supplements of omega-3 fatty acids may improve the kidney health of diabetics. In this study, the researchers evaluated kidney function by measuring creatine levels, with high levels indicative of damage to the functioning of nephrons in the kidney.

"Our results showed a significant decrease in serum creatinine level after fish-oil supplement in Type 2 diabetes mellitus patients," stated the researchers in Diabetic Medicine (Vol. 27, pp. 54-60). "Prior studies have [also] suggested that fish-oil supplement has renoprotective effects in diabetes mellitus," they added.

Omega-3 May Reduce the Risk of Type-1 Diabetes

A study published in the *Journal of the American Medical Association* (2007, Vol. 298, pp. 1420-1428) reported that higher intakes of omega-3 may actually reduce the risk of type-1 diabetes by 55 per cent. The study analysed data from 1,770 children at high risk of developing type-1 diabetes.

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"Dietary intake of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) and diabetic nephropathy – cohort analysis of the Diabetes Control and Complications Trial (DCCT) Diabetes Care"
Authors: C.C. Lee, S.J. Sharp, D.J. Wexler, A.I. Adler