SA's omega-3 supplements - a load of old codswallop?

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The headline may be a touch strong, but a new study out of the Cape Peninsula University of Technology has proved it's largely true. The majority of omega-3 supplements available locally ain't what they say they are...

We have been told to take more of it, and there's substantial evidence that omega-3 (n-3) is crucial and protective for our brains, hearts and immune systems. Since the typical Western diet is characterised by a low n-3 and very high n-6 fatty acid intake, many consumers rely on supplements to increase their daily n-3 intakes. The supplements market has become a mega-million business here and elsewhere in the world. Alas, CPUT's scientists have shown that over 50 percent of n-3 supplements on the market in SA are of dubious benefit.

In a study recently published in *Cardiovascular Journal of Africa*, a research team from CPUT's Functional Food Research Unit, Department of Agriculture and Food Science, in conjunction with the Nutritional Intervention Research Unit, Medical Research Council of SA, tested 45 commercially-available products on the South African market for their fatty acid composition.

"Since solid and voluminous scientific backing for the health benefits of n-3 fatty acids exists, a high level of public awareness and acceptance of n-3 fatty acids is becoming more apparent. Considering the fact that it is not always possible to consume adequate amounts of n-3 fatty acids through the diet, the interest in n-3 fatty acid supplements has soared," say the authors, Dr Maretha Opperman, Prof Spinne Benade and De Wet Marais.

"The aim of this study was therefore to analyse the fatty acid content, composition and the level of rancidity of commercially-available n-3 supplements on the South African market. In addition, the mercury content of all the products was determined."

Brands analysed, in no particular order, included: Amipro, Biogen, Equazen, Vital, Clicks, Clicks Health Basics, Bettaway, Thinkwell, AddVance, NutriLida, Dischem, Golden Products, Health Balance, Holstix Fish, AddAway, Tslim Plus, Amway Nutrilite, Rejuvenesse, The Real Thing, Solal, Durbell, Natrodale, Optimega, Revite, Vitaforce, Mum Omega, Preg Omega, OmegaCare, Brain Child, Bioter Health and Unique Formulations.

Currently there are no South African daily dietary intake recommendations for n-3 fatty acids. However, manufacturers of n-3 fatty acid supplements suggest a daily dosage of capsules on their labels, with no indication of the basis on which these recommendations were made, says the authors.

For the purpose of their work and publication, the International Society for the Study of Fatty Acids and Lipids (ISSFAL)14 recommendation of 500 mg EPA + DHA per day for the prevention of cardiovascular disease was applied as guideline.

After analysis using gas–liquid chromatography to determine their fatty acid content, more than half were found to contain less than 89% of the claimed content of EPA and/or DHA as stated on the product labels.

Forty-two per cent (n = 19) of supplements were able to supply 500 mg EPA + DHA/day with the administration of two capsules per day, while only 7% (n = 3) of supplements could provide the recommended intake by consumption of one capsule per day.

In 20% (n = 9) of the supplements, more than five capsules per day had to be ingested daily to meet the ISSFAL14

recommendation.

The study found that to meet ISSFAL's recommendation of 500 mg EPA + DHA/ day can cost consumers between R2 and R5 per person per day (R60 to R150 p/p/month) - for the majority (17) of the supplements. To provide a family of four with the daily recommended intake of 500 mg EPA + DHA adds up to between R242.40 and R600 per family per month.

"More than half of commercially available South African n-3 fatty acid supplements failed to attain 90% of the claimed contents of EPA or DHA or both, while approximately 15% of supplements contained more than 110% of the claimed contents of EPA or DHA or both.

"Unfortunately, if unreliable information is published on labels, consumers are supplied with misleading information, leading to erroneous dosages, with subsequent consequences. If a supplement contains less n-3 fatty acids than claimed, consumers waste their money without optimal improvement of their n-3 fatty acid status.

"In contrast, excess n-3 fatty acid intakes can be just as detrimental as a deficiency. Adverse effects of excess intake of n-3 fatty acids in healthy populations include suppression of the immune function, bleeding and increased risk of haemorrhagic stroke, as well as increased lipid peroxidation, resulting in oxidative damage to various tissues. Furthermore, simultaneous intake of n-3 fatty acids with medication such as aspirin and warfarin will excessively prolong bleeding times in individuals using anti-coagulants.5 The FDA has ruled that intakes of up to 3 g/d of marine n-3 fatty acids are generally recognised as safe (GRAS) for inclusion in the diet."

Regarding rancidity, it was found that the majority of capsules contained conjugated diene (CD) levels higher than that of vegetable oil obtained from opened containers (three months) used for domestic cooking purposes, despite the addition of vitamin E as antioxidant.

"Considering the CD content of commercially available South African n-3 fatty acid supplements, it seems that the majority contain high amounts of primary oxidation products. No clear relationship could be established between the expiry dates and the CD content of the n-3 supplements. These results therefore suggest that a considerable variation exists in the quality of the fish oil present in n-3 capsules in South Africa. This indicates that the oils present in many of the supplements are in the first stages of rancidity and hence negatively influence the quality of the product that consumers buy," says the paper.

One positive note is that South African n-3 fatty acid supplements appear to be virtually free of methyl mercury.

The authors say that since no formal regulatory structure for dietary supplements currently exists in South Africa, consumers depend on self-regulation within the nutraceutical industry for assurance of product quality, consistency, potency and purity - and their over-riding inference is that their study proves this is indeed not the case.

When asked if she could make available a list of the viable supplements which would be of great relevance for consumers, study author, Maretha Opperman, answered: "Unfortunately, because we are a university, we are not allowed to publish any such confidential information. However, we plan to conduct a follow up study on this one in conjunction with one of the most respected health organisations in SA. Together we will approach manufacturers to get permission to publish their company's results. Hopefully this publication will be ready towards the second half of the year."

Journal Reference: Analysis of omega-3 fatty acid content of South African fish oil supplements, MARETHA OPPERMAN, DE WET MARAIS, AJ SPINNLER BENADE, *Cardiovasc J Afr* 2011; 22: 324–329; www.cvja.co.za