

# Randomized Trial of Nutritional Intervention Evaluating the Effect of Rapeseed Oil, Margarine Enriched Omega 3 and their Association in Relation to a Standard Diet based on Olive Oil

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## Introduction

Polyunsaturated Fatty Acids (PUFA) long chain, particularly n-6 Arachidonic Acid (ARA) and the Docosahexaenoic acid n-3 (DHA) are significant in the growth and maturation of the newborn brain system. Their content in Human Milk (HM) varies with the mother's diet. Supplementation with n-3 PUFA ( $\alpha$ -Linolenic Acid, ALA) could rise the concentration of DHA in milk. The impartial of the study was to measure the composition of breast milk after 15 days supplementation of n-3 PUFAs. Nutritional intervention studies have shown that intake of soy-based totally protein is capable of decreasing proteinuria and attenuating renal functional or structural damage in animals and people with diverse styles of chronic renal disease. In separate studies, the effectiveness of the phenolic extract of soybean (PESB) in attenuating nephrotoxic ARF associated with gentamicin and cisplatin treatments respectively became verified in rats. PESB (acquired from soybean grown in southwestern Nigeria) drastically stepped forward renal feature and attenuated oxidative strain and tubular necrosis characterizing gentamicin and cisplatin-mediated nephropathy in each studies. Inflammatory mechanism involved in cisplatin nephrotoxicity and ARF become also extensively attenuated as obvious by means of the marked reduction in myeloperoxidase activity and nitric oxide generation. It changed into consequently concluded that the nephroprotection provided with the aid of the

soybean extract was in large part due to antioxidant and anti-inflammatory mechanisms and that those actions have been related to the polyphenolic content of the plant.

Rapeseed and soybean oil confirmed the capacity to be efficaciously used for biodiesel manufacturing (Demirbas, 2002; Yin et al., 2008; Pleanjai and Gheewala, 2009). In order to improve vegetable oil for biodiesel manufacturing there is a need to enhance the oxidative stability of the oil as well as its lubricity (Kinney and Clemente, 2005). Soybean is an attractive crop for biodiesel production as it produces extra usable power and less greenhouse gases than corn-based totally ethanol (Hill et al., 2006). However, soybean oil has relatively high oxidative reactivity, due to its PUFA content material, which negatively impacts the storage existence of the soybean-derived biodiesel, leading to the formation of compounds that may clog gas filters (Canakci et al., 1999; Mittelbach and Gangl, 2001). It become proven that decreasing linoleic and linolenic acid content in the oil would improve balance of the vegetable oil (Kinney and Clemente, 2005). It has been also hooked up, through preferred oxidation measurements, that the excessive oleic and coffee palmitic oil content material of the oil makes it oxidatively more solid than the traditional soybean oil (Kinney and Knowlton, 1997). Severe reduction in PUFAs paralleled with an increase in oleic acid content material changed into done in soybean in which the Fad2-1 gene changed into down-

regulated blockading the flux from oleic acid into PUFA growing on the equal time the content material of monounsaturated fatty acids (Kinney, 1998). High oleic acid (84–88%) transgenic soybean became also generated the usage of sense Fad2-1 by way of microprojectile bombardment (Kinney and Knowlton, 1997). Importantly, the newly changed line of soybean did not display any terrible effect on agronomic developments in discipline trials.

Lower doses of  $\omega$ -three fatty acids, given in the form of enriched margarines, did now not lessen the general charge of fundamental cardiovascular activities following myocardial infarction, in step with consequences from the multicentre Alpha Omega trial. However, there had been borderline considerable reductions among submit-MI sub-agencies, such as diabetic sufferers and women receiving alpha-linolenic acid (ALA) supplements, said foremost investigator Daan Kromhout from Wageningen University, the Netherlands, in a hot-line consultation at the ESC.

The number one endpoint of the Alpha Omega trial became predominant cardiovascular events (MACE) together with revascularisation by means of PCI or CABG. Important secondary endpoints protected deadly coronary coronary heart sickness and ventricular arrhythmia-related activities, defined as surprising demise, cardiac arrest and ICD placement.

### Material & Method

Multicentric randomized trial (Human milk banks: Bordeaux, Lyon, Paris, Montpellier), conferring to a factorial enterprise 4 groups of 20 women each. From D0 to D15, same diet (olive oil) and from D15 to D30 diets were: Olive oil (O); margarine rich in n-3 PUFA (M); rapeseed oil (C) and M+C (MC). Diets 1-4 provided an increasing ALA intake. In the 4 groups, there was constant supply of DHA (500 mg/d, 170 g Mackerel 2 times/week). The FA composition of milk (% of total FA) was determined by direct transesterification and analyzed by GC-FID, blinded group. Nutritional

surveys were analyzed by Bilnut software. FA attentions at day 30 were associated between groups by linear regression, with a test communication between M and C.

Result: 80 mothers of term infants were included: Age  $31.5 \pm 4.2$ ,  $66.1 \pm 9.8$  kg (mean  $\pm$  SD). ALA was higher in MC (2.2%) C (1.3%) and M (1.1%) groups ( $p < 0.003$ ) vs. group O (0.8%). There was a tendency for the DHA to be higher in the MC group (0.54%) vs. O group (0.39%) ( $p = 0.11$ ). The ratio LA/ALA was the lowest = 5.5 ( $p < 0.001$ ) in the group MC and bonded to an ALA rate to 2.1%. ARA is the highest in group C (0.37% vs. 0.33% MC, M and O = 0.32, 0.34%;  $p = 0.02$ ). The dietary survey showed a slightly high fat diet compared to RDA

### Conclusion

We recommend for lactating women, a balanced varied diet consisting of 170 g mackerel two times/week or equivalent, which covers the needs for DHA and ARA. Margarine consumption omega 3 and rapeseed oil improves the ratio LA/ALA (5.5) the most favorable ratio to increase the synthesis of DHA from ALA

### Biography

Claude Billeaud has received his MD degree from the Medical University of Bordeaux, France in 1979 after graduating in Human Cytogenetics. He further studied pediatrics and has been the Clinical Assistant Director of Bordeaux University in the Departments of Pediatrics, Neonatology and Intensive Care since 1983. He currently serves as a Pediatrician in the Neonatal Unit at the Children's Hospital of Bordeaux, a Scientific Manager of Bordeaux-Marmande Human Milk Bank; a Lecturer and Head of Research (habilitation to direct research) in Neonatal Nutrition at the Medical University of Bordeaux. Also, his interest in research led him to graduate in Biology and Health, awarded Masters in Statistics applied to clinical research and completed a PhD in Nutrition and Food Science.