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N-3 Docosahexaenoic Acid (DHA) status is positively associated with plasma lipocalin and resistin and inversely associated MCP-1 in post-partum women

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DHA is an omega-3 fatty acid with demonstrated anti-inflammatory and potential insulin-enhancing and anti-obesity effects. This study examined the relationship of DHA with Lipocalin II, a ligand for small lipophilic substances which presumably participates in inflammation. We previously demonstrated a seemingly paradoxical positive association between erythrocyte (RBC) n-3 DHA and lipocalin II in 85 pregnant women at 24 – 26 weeks of gestation. A follow up study of 27 of these participants at 1.5 – 2 y postpartum (mean age 35 +/- 3.7 y, BMI 24.6 +/- 3.5) supplemented with 0 or 300 mg DHA from week 26 of pregnancy through three months of lactation, reaffirmed the positive correlation between RBC-DHA (expressed as % total fatty acids) and lipocalin (r=0.451, p=0.018). RBC n-3 DHA and total dietary intake of DHA were positively correlated with the anti-inflammatory adipokine, resistin (p=0.031) when corrected for BMI. RBC DHA was negatively correlated with the inflammatory mediator MCP-1 (r=-0.427, p=0.026).

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Lipase-catalyzed acidolysis of maize germ oil with caprylic acid to produce MLM-type structured lipids

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In order to produce functional MLM-type structured Lipid with maize germ oil in solvent free system was investigated. Six commercial lipases from different sources (Lipozyme RM IM, Lipozyme TL IM, Novozym 435, Lipase AK, Lipase AY and Newlase F) were compared for their ability to incorporate caprylic acid into the maize germ oil in solvent free system. Of the six lipases that were tested in the initial screening, Lipozyme RM IM from *Rhizomucor miehei* resulted in the highest incorporation of caprylic acid into maize germ oil. This enzyme was further studied for the effect of mole ratio of oil and caprylic acid, enzyme load, reaction time and reaction temperature on the incorporation of caprylic acid into maize germ oil. Incorporation of caprylic acid was higher when reactions were carried with 12% lipase of the total weight of substrates with a 4:1 mole ratio of caprylic and acidoil, time course and temperature for synthesis MLM-type structured lipids were 16 h and 50°C. Lipase-catalyzed acidolysis of grape seed oil with caprylic acid could produce high quality MLM-type structured lipids in solvent free system.

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