**Selected by
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Latest Publications You Should Not Miss

Thijs C, Müller A, Rist L, Kummeling I, Snijders BEP, Huber M, van Ree R, Simões-Wüst AP, Dagnelie PC, van den Brandt PA: Fatty acids in breast milk and development of atopic eczema and allergic sensitisation in infancy. *Allergy* 2010;66:55–67.

Background: One of the explanations for the increasing prevalence of atopic diseases is a relative low perinatal supply of n-3 fatty acids. However, this does not explain the protective effects of whole-fat dairy products or high levels of transfatty acids in breast milk, observed in some studies. We evaluated the role of perinatal supply of fatty acids in the early development of atopic eczema and allergic sensitisation.

Methods: Fatty acids, including n-3 long-chain polyunsaturated fatty acids (LCPs) as well as ruminant fatty acids (ruminic acid, cis-9, trans-11-C18:2 conjugated linoleic acid; and vaccenic acid, trans-11-C18:1), were determined in breast milk sampled at 1 month postpartum from 310 mother-infant pairs in the KOALA Birth Cohort Study, the Netherlands. Children were followed for atopic outcomes until 2 years of age.

Results: Higher concentrations of n-3 LCPs as well as ruminant fatty acids were associated with lower risk of (1) parent-reported eczema, (2) atopic dermatitis (UK Working Party criteria), and (3) sensitisation at age 1 year (as revealed by specific serum IgE levels to cow's milk, hen's egg and/or peanut). In multivariable logistic regression analysis, the inverse associations between ruminant fatty acid concentrations in breast milk and atopic outcomes were found to be independent from n-3 LCPs.

Conclusions: The results confirm a protective role of preformed n-3 LCPs in the development of atopic disease. Moreover, this is the first study in humans confirming results from animal studies of protective effects of ruminant fatty acids against the development of atopic manifestations.

Mueller A, Thijs C, Rist L, Simões-Wüst, Huber M, Steinhart H: Trans fatty acids in human milk are an indicator of different maternal dietary sources containing trans fatty acids. *Lipids* 2010;45:245–251.

The trans fatty acid (TFA) patterns in the fats of ruminant meat and dairy products differ from those found in other (processed) fats. We

have evaluated different TFA isomers in human breast milk as an indicator of dietary intake of ruminant and dairy fats of different origins. Breast milk samples were collected 1 month postpartum from 310 mothers participating in the KOALA Birth Cohort Study (The Netherlands). The study participants had different lifestyles and consumed different amounts of dairy products. Fatty acid methyl esters were determined by GC-FID and the data were evaluated by principal component analysis (PCA), ANOVA/Post Hoc test and linear regression analysis. The two major principal components were (1) 18:1 trans-isomers and (2) markers of dairy fat including 15:0, 17:0, 11(trans)18:1 and 9(cis),11(trans)18:2 (CLA). Despite similar total TFA values, the 9(trans)18:1/11(trans)18:1-ratio and the 10(trans)18:1/11(trans)18:1-ratio were significantly lower in milk from mothers with high dairy fat intake (40–76 g/day: 0.91 +/- 0.48, $P < 0.05$) compared to low dairy fat intake (0–10 g/day: 1.59 +/- 0.48), and lower with strict organic meat and dairy use (>90% organic: 0.92 +/- 0.46, $P < 0.05$) compared to conventional origin of meat and dairy (1.40 +/- 0.61). Similar results were obtained for the 10(trans)18:1/11(trans)18:1-ratio. We conclude that both ratios are indicators of different intake of TFA from ruminant and dairy origin relative to other (including industrial) sources.

Fromme H, Gruber L, Seckin E, Raab U, Zimmermann S, Kiranoglu M, Schlummer M, Schwegler U, Smolic S, Völkel W; HBMnet: Phthalates and their metabolites in breast milk – results from the Bavarian Monitoring of Breast Milk (BAMBI). *Environ Int* 2011;37:715–722.

Phthalates have long been used as plasticizers to soften plastic products and, thus, are ubiquitous in modern life. As part of the Bavarian Monitoring of Breast Milk (BAMBI), we aimed to characterize the exposure of infants to phthalates in Germany. Overall, 15 phthalates, including di-2-ethylhexyl phthalate (DEHP), di-n-butyl phthalate (DnBP), di-isobutyl phthalate (DiBP), di-isononyl phthalate (DiNP), three primary metabolites of DEHP [mono-(2-ethylhexyl) phthalate (MEHP), mono-isobutyl phthalate (MiBP), and mono-n-butyl phthalate (MnBP)], and two secondary metabolites of DEHP were analyzed in 78 breast milk samples. We found median concentrations of 3.9 ng/g for DEHP, 0.8 ng/g for DnBP, and 1.2 ng/g for DiBP, while other parent phthalates were found

in only some or none of the samples at levels above the limit of quantitation. In infant formula ($n = 4$) we observed mean values of 19.7 ng/g (DEHP), 3.8 ng/g (DnBP), and 3.6 ng/g (DiBP). For MEHP, MiBP, and MnBP, the median values in breast milk were 2.3 µg/l, 11.8 µg/l, and 2.1 µg/l, respectively. The secondary metabolites were not detected in any samples. Using median and 95th percentile values, we estimated an 'average' and 'high' daily intake for an exclusively breast-fed infant of 0.6 µg/kg body weight (b.w.) and 2.1 µg/kg b.w., respectively, for DEHP, 0.1 µg/kg b.w. and 0.5 µg/kg b.w. for DnBP, and 0.2 µg/kg b.w. and 0.7 µg/kg b.w. for DiBP. For DiNP, intake values were 3.2 µg/kg b.w. and 6.4 µg/kg b.w., respectively, if all values in milk were set half of the detection limit or the detection limit. The above-mentioned 'average' and 'high' intake values corresponded to only about 2% to 7%, respectively, of the recommended tolerable daily intake. Thus, it is not likely that an infant's exposure to phthalates from breast milk poses any significant health risk. Nevertheless, other sources of phthalates in this vulnerable phase have to be considered. Moreover, it should be noted that for infants nourished with formula, phthalate intake is of the same magnitude or slightly higher (DEHP) than for exclusively breast-fed infants.

Turkylmaz C, Onal E, Hirfanoglu IM, Turan O, Koc E, Ergenekon E, Atalay Y: The effect of galactagogue herbal tea on breast milk production and short-term catch-up of birth weight in the first week of life. J Altern Complement Med 2011;17:139–142.

Objectives: The aim of this study was to evaluate whether consumption of maternal herbal tea containing fenugreek had any effects on breast milk production and infants' weight gain pattern in the early postnatal period.

Design and Subjects: Sixty-six (66) mother-infant pairs were randomly assigned to 3 groups. Group 1 ($n = 22$) consisted of mothers who were receiving herbal tea containing fenugreek every day. Group 2 ($n = 22$) and group 3 ($n = 22$) were assigned as placebo and controls, respectively.

Outcome Measures: Birth weight, loss of birth weight, time of regain of birth weight, amount of breast milk assessed on the third day after delivery were determined.

Results: Maximum weight loss was significantly lower in infants in group 1 compared to both the placebo and control groups ($p < 0.05$). Infants in group 1 regained their birth weight earlier than those in control and placebo groups ($p < 0.05$). The mean measured breast milk volume of the mothers who received galactagogue tea was significantly higher than the placebo and control groups ($p < 0.05$).

Conclusions: Maternal galactagogue herbal tea supplementation seems to be useful for enhancing breast milk production and facilitating infant birth weight regain in early postnatal days.

Zhang H, Peng Y, Liu Z, Li S, Lv Z, Tian L, Zhu J, Zhao X, Chen M: Effects of acupuncture therapy on abdominal fat and hepatic fat content in obese children: a magnetic resonance imaging and proton magnetic resonance spectroscopy study. J Altern Complement Med 2011; 17:413–420.

Objectives: The aim of this study was to use magnetic resonance imaging (MRI) together with proton magnetic resonance spectroscopy ((1) H-MRS) to study the influence of acupuncture therapy on abdominal fat and hepatic fat content in obese children.

Design: The design was a longitudinal, clinical intervention study of acupuncture therapy.

Subjects: Subjects were 10 healthy, obese children (age: 11.4 ± 1.65 years, body-mass index [BMI]: 29.03 ± 4.81 kg/m²).

Measurements: Measurements included various anthropometric parameters, abdominal fat (assessed by MRI) and hepatic fat content (assessed by (1) H-MRS) at baseline and after 1 month of acupuncture therapy.

Results: One (1) month of acupuncture therapy significantly reduced the subjects' BMI by 3.5% ($p = 0.005$), abdominal visceral adipose tissue (VAT) volume by 16.04% ($p < 0.0001$), abdominal total adipose tissue volume by 10.45% ($p = 0.001$), and abdominal visceral to subcutaneous fat ratio by 10.59% ($p = 0.007$). Decreases in body weight (−2.13%), waist circumference (−1.44%), hip circumference (−0.33%), waist-to-hip ratio (WHR) (−0.99%), abdominal subcutaneous adipose tissue (SAT) volume (−5.63%), and intrahepatic triglyceride (IHTG) content (−9.03%) were also observed, although these were not significant ($p > 0.05$). There was a significant correlation between the level of abdominal fat (SAT, VAT) and anthropometric parameters (weight, BMI, waist circumferences, hip circumferences). There was no statistically significant correlation between IHTG and anthropometric parameters or abdominal fat content.

Conclusions: The first direct experimental evidence is provided demonstrating that acupuncture therapy significantly reduces BMI and abdominal adipose tissue by reducing abdominal VAT content without significant changes in body weight, waist circumference, hip circumference, WHR, abdominal SAT, or IHTG content. Thus, the use of acupuncture therapy to selectively target a reduction in abdominal VAT content should become more important and more popular in the future.

Sánchez-Villegas A, Verberne L, De Irala J, Ruíz-Canela M, Toledo E, Serra-Majem L, Martínez-González MA: Dietary fat intake and the risk of depression: the SUN project. PLoS ONE 2011;6:e16268.

Emerging evidence relates some nutritional factors to depression risk. However, there is a scarcity of longitudinal assessments on this relationship.

Objective: To evaluate the association between fatty acid intake or the use of culinary fats and depression incidence in a Mediterranean population.

Material and Methods: Prospective cohort study (1999–2010) of 12,059 Spanish university graduates (mean age: 37.5 years) initially free of depression with permanently open enrolment. At baseline, a 136-item validated food frequency questionnaire was used to estimate the intake of fatty acids (saturated fatty acids (SFA), polyunsaturated fatty acids (PUFA), trans unsaturated fatty acids (TFA) and monounsaturated fatty acids (MUFA) and culinary fats (olive oil, seed oils, butter and margarine)). During follow-up participants were classified as incident cases of depression if they reported a new clinical diagnosis of depression by a physician and/or initiated the use of antidepressant drugs. Cox regression models were used to calculate Hazard Ratios (HR) of incident depression and their 95% confidence intervals (CI) for successive quintiles of fats.

Results: During follow-up (median: 6.1 years), 657 new cases of depression were identified. Multivariable-adjusted HR (95% CI) for depression incidence across successive quintiles of TFA intake were: 1 (ref), 1.08 (0.82–1.43), 1.17 (0.88–1.53), 1.28 (0.97–1.68), 1.42 (1.09–1.84) with a significant dose-response relationship (p for trend = 0.003). Results did not substantially change after adjusting for potential lifestyle or dietary confounders, including adherence to a Mediterranean Dietary Pattern. On the other hand, an inverse and significant dose-response relationship was obtained for MUFA (p for trend = 0.05) and PUFA (p for trend = 0.03) intake.

Conclusions: A detrimental relationship was found between TFA intake and depression risk, whereas weak inverse associations were found for MUFA, PUFA and olive oil. These findings suggest that cardiovascular disease and depression may share some common nutritional determinants related to subtypes of fat intake.

Jalali-Khanabadi BA, Mozaffari-Khosravi H, Parsaeyan N: Effects of almond dietary supplementation on coronary heart disease lipid risk factors and serum lipid oxidation parameters in men with mild hyperlipidemia. J Altern Complement Med 2010;16: 1279–1283.

Objectives: Oxidation and level of plasma lipids are closely implicated in the development of coronary heart disease (CHD). Dietary almond supplementation may participate in beneficial effects on CHD lipid risk factor levels and their susceptibility to oxidative modification. The aim of this study was to evaluate the effects of dietary supplementation with almond on serum lipid levels and their relation to lipid oxidation parameters in men with mild hyperlipidemia.

Design: Thirty (30) healthy volunteer men (age 45.57 ± 7.14 years and body-mass index 24.29 ± 2.15 kg/m²) with mild hyperlipidemia received 60 g almond daily for 4 weeks.

Outcome Measures: Overnight fasting blood samples were obtained before and after supplementation. Serum levels of lipids, lipoproteins, and apolipoproteins and copper-induced serum lipid oxidation were

determined. Lipid oxidation was followed by monitoring of the change of conjugated dienes in diluted serum after addition of Cu (2+). A number of quantitative parameters including lag-time, maximal rate of oxidation (V-max), and maximal amount of lipid peroxide products (OD-max) were evaluated.

Results: After 4 weeks, almond supplementation significantly decreased low-density lipoprotein cholesterol, total cholesterol (TC), and apolipoprotein B100 (apo-B100). At baseline, there was little correlation between lipid risk factors and lipid oxidation parameters, but a positive correlation was observed between TC and lag-time ($r = 0.6$, $p = 0.001$), negative correlation between TC with V-max and OD-max ($r = -0.65$, $p < 0.001$ and $r = -0.61$, $p = 0.001$), and also positive correlation between apo-B100 with V-max and OD-max ($r = 0.48$, $p = 0.01$ and $r = 0.54$, $p = 0.003$) after almond supplementation.

Conclusions: These results demonstrated that almond supplementation, in addition to lowering effects on serum levels of CHD lipid risk factors, may contribute to a dramatic change in the relation of lipid risk factors and susceptibility of serum lipids to oxidative modification. This may be due to the distribution of different almond phenolic antioxidants in different components of serum including nonlipoprotein molecules such as serum albumin.