**RECOMMENDATIONS ON DIETARY FAT INTAKE IN PREGNANCY**

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**ABSTRACT**

Dietary fat intake in pregnancy and lactation affects pregnancy outcomes as well as child development. The European Commission Chartered the EU Early Nutrition Research Project PERILIP, jointly with the EU Early Nutrition Programming Project, to develop recommendations on dietary fat intake in pregnancy and lactation. This was approached by reviewing available evidence and by a consensus conference attended by some 50 experts including representatives of 10 international scientific associations. The adopted consensus was that: Dietary fat intake in pregnancy and lactation (E%) should be as recommended for the general population. Pregnant and lactating women should aim to achieve a dietary intake at least 200 g DHA/day on average. Intakes of up to 1 g/day of DHA or 2.7 g/day of n-3 LC-PUFA were used in RCT, without significant adverse effects. Women in child-bearing age should consume 1-2 times of fish per week, including fatty fish. Intake of the precursor, alpha-linolenic acid, is far less effective with respect to DHA deposition in fetal brain than the intake of preformed DHA. Intake of fish or n-3 LC-PUFA results in a slightly longer pregnancy duration. Dietary inadequacies should be screened for during pregnancy, and individual counseling be offered if needed.

**BACKGROUND**

Dietary fat intake of women during pregnancy affects pregnancy outcomes, and fat intake during pregnancy and lactation modulate the growth, development and long-term health of their children. Many observations suggest an important role of n-3 fatty acids in prolonging gestation in enhancing fetal growth, in preventing complications of pregnancies like premature delivery, preeclampsia, IUGR and their consequences on newborn.

n-3 LC-PUFA docosahexaenoic acid needs to be deposited in good amounts in the central nervous system during the perinatal brain growth spurt, while n-6 LC-PUFA Arachidonic acid accretion mainly occurs postnatally.

Other observations underlined the role of lipophilic vitamins (A, E, lycopene) in protection against oxidative damage that have a pivotal role in many pathologic conditions of pregnancy and the perinatal period (preeclampsia, thrombophilathy, etc.).

In the last years the effects of supplementing pregnant women with n-3 LC-PUFA from different sources on pregnancy outcome have been evaluated in a number of randomized controlled clinical trials with a variety of results depending on type of supplement (fish oil or single cell oils), doses (150mg-2.7g/day) period of supplementation.

Moreover, higher DHA supplies during pregnancy and lactation and to the infant after birth has been associated with beneficial effects on the development of visual acuity, cognitive functions and attention, maturity of sleep patterns, spontaneous motor activity, immune functions, mood and behavior.

In view of the relevance of this issue for public health, the European Commission mandates the European Research Project PERILIP to develop recommendations on dietary fat intake in pregnancy and lactation, based on current scientific evidence.

**METHODS**

Systematic literature reviews were performed about different topics:

- 1-effects of n-3 polyunsaturated fatty acids intakes for women with low-risk pregnancies and with high risk pregnancies
- 2-maternal polyunsaturated fatty acid intake during lactation and its effects on human milk composition and infantile outcome;
- 3-effect of antidepressant in pregnant and lactating women;
- 4-statistical evaluation on sea fish consumption in women of childbearing age;
- 5-effects of n-3 fatty acids intakes and of antioxidants for pregnant women.

These reviews were discussed and evaluated in an expert workshop held from 14-15 September 2005 at Withbad Kreuth, Bavaria, Germany.

**RESULTS**

**ENERGY REQUIREMENTS OF PREGNANCY AND LACTATION**

- *Pregnancy leads to a modest in increase in energy needs: 1 trimester→+375kJ/day II trimester→+1200kJ/day III trimester→+1050kJ/day*
- *Lactating well-nourished women need an increment of energy intake of 1950kJ/day*
- *No indications for a need to change total fat intakes (as % of energy intake).*

**n-3 FATTY ACID INTAKE IN PREGNANCY AND LACTATION**

- *Fetal DHA accretion is approximately 87 mg/day in the last trimester of pregnancy. Because of the scarce supply of n-3 LC-PUFA in the human diet, maternal dietary intake of preformed DHA is deposited in fetal brain, pregnant women should reach an average intake of at least 200 mg DHA/day.*
- *During lactation and to the infant after birth has been associated with beneficial effects on the development of visual acuity, cognitive functions and attention, maturity of sleep patterns, spontaneous motor activity, immune functions, mood and behavior.*
- *The currently available data do not provide a basis for recommending antioxidant intakes for pregnant and lactating women in excess of reference nutrient intakes.*

**CONCLUSIONS AND RECOMMENDATIONS**

1. Dietary fat intake during pregnancy and lactation (as a proportion of energy intake) should be the same as that recommended for the general population.

2. The omega-3 long-chain polyunsaturated fatty acid (n-3 LC-PUFA), docosahexaenoic acid, must be deposited in adequate amounts in brain and other tissues during fetal and early postnatal life. Several studies have shown an association between maternal dietary intake of fatty fish or oils providing n-3 LC-PUFA during pregnancy and/or lactation and visual and cognitive development as well as other functional outcomes of the infant. Therefore, pregnant and lactating women should aim to achieve a dietary intake of 1 g/day of DHA or 2.7 g/day of n-3 LC-PUFA have been used in randomized trials without occurrence of significant adverse effects.

3. Women of childbearing age should consume 1-2 portions of fish per week, including fatty fish which is a good source of n-3 LC-PUFA. This intake of fatty fish usually does not exceed the tolerable intake of environmental contaminants. Dietary fish should be selected from a wide range of species without undue preference for large predatory fish which are more likely to be contaminated with methyl-mercury.

4. Intake of the precursor, alpha-linolenic acid, is far less effective with respect to DHA deposition in fetal brain than the intake of preformed DHA.

5. There is no evidence that women of childbearing age whose dietary intake of linoleic acid is adequate need an additional dietetic intake of Arachidonic acid.

6. Some studies have shown that maternal intake of fish, fish oils or n-3 LC-PUFA results in a slightly longer duration of gestation, a somewhat higher birth weight and a reduced risk of early preterm delivery. The clinical importance of such effects with respect to infant health has not been fully elucidated.

7. Screening for dietary inadequacies should be performed during pregnancy, preferably during the first trimester. If less than desirable dietary habits are detected, individual counseling should be offered if needed.