Essential fatty acids in mothers and their neonates.

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Essential fatty acids (EFAs) and their long-chain polyenes (LCPs) are indispensable for human development and health. Because humans cannot synthesize EFAs and can only ineffectively synthesize LCPs, EFAs need to be consumed as part of the diet. Consequently, the polyunsaturated fatty acid (PUFA) status of the developing fetus depends on that of its mother, as confirmed by the positive relation between maternal PUFA consumption and neonatal PUFA status. Pregnancy is associated with a decrease in the biochemical PUFA status, and normalization after delivery is slow. This is particularly true for docosahexaenoic acid (DHA) because, on the basis of the current habitual diet, birth spacing appeared to be insufficient for the maternal DHA status to normalize completely. Because of the decrease in PUFA status during pregnancy, the neonatal PUFA status may not be optimal. This view is supported by the lower neonatal PUFA status after multiple than after single births. The neonatal PUFA status can be increased by maternal PUFA supplementation during pregnancy. For optimum results, the supplement should contain both n-6 and n-3 PUFAs. The PUFA status of preterm neonates is significantly lower than that of term infants, which is a physiologic condition. Because the neonatal DHA status correlates positively with birth weight, birth length, and head circumference, maternal DHA supplementation during pregnancy may improve the prognosis of preterm infants. In term neonates, maternal linoleic acid consumption correlates negatively with neonatal head circumference. This suggests that the ratio of n-3 to n-6 PUFAs in the maternal diet should be increased. Consumption of trans unsaturated fatty acids appeared to be associated with lower maternal and neonatal PUFA status. Therefore, it seems prudent to minimize the consumption of trans fatty acids during pregnancy.