

# Abstract

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## Fatty acid compositions of colostrum, cord blood, maternal blood and major infant formulas in Japan.

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**OBJECTIVE:** Lipid profiles in colostrum, cord blood, maternal blood and major infant formulas in Japan were analyzed.

**METHODS:** In the first part of the study, colostrum obtained from 36 normal delivery women and six kinds of infant formulas provided by three major milk companies were analyzed for their fatty acid composition using capillary gas-lipid chromatography.

**RESULTS:** Although enriched with docosahexaenoic acid (DHA), the percent composition of DHA in the six infant formulas (0.15-0.21%) was significantly lower than that in the colostrum (1.1 +/- 0.54). Arachidonic acid (AA) and eicosapentaenoic acid (EPA) were present in the colostrum but not detectable in the infant formulas. It is recommended that although the exact amount of specific fatty acids needed in the infant diet was not completely known, to be as close as possible to natural breast milk, the level of DHA, EPA and AA should be raised in the infant formulas. In the second part of the study, 19 pairs of maternal and cord blood were analyzed for their lipid profile. All samples were from normal vaginal delivery. The measurement of cholesterol, triglycerides, phospholipids and free fatty acids was performed with commercially available enzymatic methods on an automated discrete random access analyzer. Total fatty acid was determined as described in the first part of the study. The results were analyzed with Spearman's rank correlation coefficient. No correlation could be found between maternal and fetal concentrations of cholesterol, triglycerides, phospholipids or total fatty acids. Correlation could be found in non-esterified fatty acids, in palmitic acids, and oleic acid levels.

**CONCLUSION:** It was concluded that the lipid transport and metabolism in the fetal-placenta unit is complex and further delicate investigation is required.

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