

Docosahexaenoic acid level of breast milk of Iranian women in low fish – consuming and high fish – consuming regions

Ahmad S Farhat^{1*}, Mojgan Mirzaeian², Hadi Mirzaeian³,
B Holub⁴, Ashraf Mohammadzadeh⁵

1- Neonatal Research Center, school medicine, Mashhad University of Medical Sciences, Mashhad, Iran

* (Corresponding author: FarhatA@mums.ac.ir, +98-0511-8521121)

2,4- Department of Human Biology and Nutritional Sciences, University of Guelph, Guelph, Ontario, Canada

3- Mehr Hazrat Abbas Hospital, Mashhad, Iran

5- Neonatal Research Center, school of medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

Objective:

Sufficient intakes of docosahexaenoic acid (DHA) via breast milk are required for optimizing visual and neural development at early stages of life. Little or no information is available on DHA intakes and levels found in breast milk in Iranian women and surrounding regions. In this study we measure the DHA in the breast milk of lactating Iranian women from low and high – fish-eating regions and estimate their DHA intakes.

Methods:

This is a cross-sectional and prospective study done in two cities of Iran (Mashhad and Amol); 10 ml of mature breast milk were obtained from 40 healthy lactating women (selected randomly) at Imam Reza Hospital of Mashhad (a low fish-consuming area) and Amir Kola Children Hospital of Amol city (a high fish-consuming area). The data were analyzed in two samples by using t-independent test and Mann-Whitney test via SPSS version 11.5 software.

Results:

The breast milk DHA levels of mothers living in the high fish-consuming area (Amol) were significantly higher than mothers living in the low fish-consuming area (Mashhad, $p < 0.01$). It can be estimated that the average DHA intake of lactating Iranian women is approximately 184 mg/dl in Mashhad and 307 mg/dl in Amol.

Conclusion:

The DHA content of breast milk was higher in high-fish consuming area in comparison to the low-fish consuming area in Iran indicating that the DHA levels of breast milk are influenced by fish consumption.

Keywords:

Breast milk, Docosahexaenoic acid level, Low and high fish-consuming region

Introduction

The central nervous system begins to mature during intrauterine life and continues to do so until seven years of age, exhibiting greatest intensity during the first two years of life. The morphogenesis process, which is directly related to cerebral function, requires a supply of specific fatty acids, in particular arachidonic and

docosahexaenoic acids (DHA). This means that appropriate maternal nutrition is essential to the fetus during pregnancy and lactation. We know there is increased functional and biochemical demand on maternal long chain polyunsaturated fatty acids (PFA) (1). Omega-3 long-chain fatty acids can be found in the brain and retina and are active in growth processes, contributing to