



REVIEW ARTICLE

Vitamin E concentration in human milk and associated factors: a literature review^{☆,☆☆}



Mayara S.R. Lima^{*}, Roberto Dimenstein, Karla D.S. Ribeiro

Universidade Federal do Rio Grande do Norte, Natal, RN, Brazil

Received 6 March 2014; accepted 15 April 2014
Available online 19 June 2014

KEYWORDS

Vitamin E;
Alpha-tocopherol;
Human milk;
Lactation;
Newborn

Abstract

Objective: To systematize information about vitamin E concentration in human milk and the variables associated with this composition in order to find possible causes of deficiency, supporting strategies to prevent it in postpartum women and infants.

Source: Studies published between 2004 and 2014 that assayed alpha-tocopherol in human milk of healthy women by high performance liquid chromatography were evaluated. The keywords used were “vitamin E”, “alpha-tocopherol”, “milk, human”, “lactation”, and equivalents in Portuguese, in the BIREME, CAPES, PubMed, SciELO, ISI Web of Knowledge, HighWire Press, Ingenta, and Brazilian Digital Library of Theses and Dissertations databases.

Summary of the findings: Of the 41 publications found on the subject, 25 whose full text was available and met the inclusion criteria were selected. The alpha-tocopherol concentrations found in milk were similar in most populations studied. The variable phase of lactation was shown to influence vitamin E content in milk, which is reduced until the mature milk appears. Maternal variables parity, anthropometric nutritional status, socioeconomic status, and habitual dietary intake did not appear to affect the alpha-tocopherol levels in milk. However, the influence of the variables maternal age, gestational age, biochemical nutritional status in alpha-tocopherol, and maternal supplementation with vitamin E had conflicting results in the literature.

Conclusion: Alpha-tocopherol concentration in milk decreases during lactation, until the mature milk appears. To confirm the influence of some maternal and child variables on milk vitamin E content, further studies with adequate design are needed.

© 2014 Sociedade Brasileira de Pediatria. Published by Elsevier Editora Ltda.

Este é um artigo Open Access sob a licença de [CC BY-NC-ND](#)

[☆] Please cite this article as: Lima MS, Dimenstein R, Ribeiro KD. Vitamin E concentration in human milk and associated factors: a literature review. J Pediatr (Rio J). 2014;90:440–8.

^{☆☆} Study conducted at the Universidade Federal do Rio Grande do Norte (UFRN), Natal, RN, Brazil.

^{*} Corresponding author.

E-mail: mayara.santarosa@hotmail.com (M.S.R. Lima).

PALAVRAS-CHAVE

Vitamina E;
Alfa-tocoferol;
Leite humano;
Lactação;
Recém-nascido

Concentração de vitamina E no leite humano e fatores associados: uma revisão de literatura**Resumo**

Objetivo: Sistematizar informações sobre a concentração de vitamina E no leite humano e variáveis associadas a essa composição, a fim de encontrar possíveis causas de deficiência, subsidiando estratégias para prevenção desta em puérperas e lactentes.

Fonte dos dados: Foram avaliados estudos publicados entre 2004 e 2014 que determinaram o alfa-tocoferol no leite humano de mulheres saudáveis por Cromatografia Líquida de Alta Eficiência. Os descritores utilizados foram "leite humano", "alfa-tocoferol", "vitamina E", "lactação" e seus equivalentes em inglês, nas bases de dados BIREME, Periódicos CAPES, PubMed, SciELO, ISI Web of Knowledge, HighWire Press, Ingenta e Biblioteca Digital Brasileira de Teses e Dissertações.

Síntese dos dados: Das 41 publicações encontradas sobre a temática, 25 foram selecionadas, por possuírem texto completo disponível e se encaixarem nos critérios de inclusão. As concentrações encontradas de alfa-tocoferol no leite foram semelhantes na maioria das populações estudadas. A variável fase de lactação mostrou influenciar o conteúdo dessa vitamina no leite, que vai sendo reduzido até o leite maduro. As variáveis maternas paridade, estado nutricional antropométrico, condição socioeconômica e ingestão dietética habitual parecem não afetar os níveis de alfa-tocoferol no leite. Entretanto, a influência das variáveis idade materna, idade gestacional, estado nutricional bioquímico em alfa-tocoferol e suplementação materna com vitamina E possui resultados conflitantes na literatura.

Conclusão: A concentração de alfa-tocoferol no leite diminui durante a lactação, até chegar ao leite maduro. Para confirmar a influência de algumas variáveis maternas e da criança sobre a vitamina E do leite ainda são necessários mais estudos, com desenho adequado.

© 2014 Sociedade Brasileira de Pediatria. Publicado por Elsevier Editora Ltda.

Este é um artigo Open Access sob a licença de [CC BY-NC-ND](#)

Introduction

Alpha-tocopherol, the main component of a group of compounds known as vitamin E, is a powerful antioxidant and the main fat-soluble vitamin responsible for protecting cell membranes against peroxidation. As a lipophilic compound, it accumulates in circulating lipoproteins, cell membranes, and fatty deposits, reacting with free radicals and molecular oxygen, protecting polyunsaturated fatty acids (PUFAs) and lipoproteins from peroxidation.^{1,2}

This vitamin is extremely important in the early stages of life, from conception to postnatal development. During pregnancy, placental transfer of vitamin E to the fetus is limited, making breast milk the only source of this nutrient for infants that are exclusively breastfed. This intake represents an important way to supply the newborn with an essential antioxidant protection and stimulate immune system development.³

Considering the importance of vitamin E for the newborn, many studies aimed to determine the levels of alpha-tocopherol in breast milk. However, the literature presents conflicting data regarding this level, such as those found by Schweigert et al.⁴ in German women, who observed alpha-tocopherol levels in the colostrum that were two-fold higher than those found in Bangladeshi women.⁵

These differences may be due to some factors that can cause changes in the concentration of alpha-tocopherol in milk. Nascimento and Issler⁶ highlight that changes in the nutritional composition of milk depend on the stage of

lactation, time of the day, time since last meal, nutrition, maternal age, gestational age of the newborn, and other individual maternal aspects.

Studies on the association of variables with alpha-tocopherol content in human milk have been performed. Therefore, considering the importance of vitamin E and the breast milk for the newborn and the different findings in the literature about this subject, this review aimed to systematize information on the levels of alpha-tocopherol in human milk and variables associated with this concentration, in order to clarify which factors influence the composition of vitamin E in milk.

Methods

Studies published between January of 2004 and February of 2014 in the BIREME, CAPES journals, PubMed, SciELO, ISI Web of Knowledge, HighWire Press, Ingenta, and Brazilian Digital Library of Theses and Dissertations databases were searched. In order to find studies pertaining to the subject of interest, specific descriptors were used during the research: human milk, alpha-tocopherol, vitamin E, lactation, and their Portuguese equivalents.

Publications whose title or summary indicated they were studies on the levels of alpha-tocopherol in human milk were selected to be read in full. The review included only studies that used high performance liquid chromatography (HPLC) to determine alpha-tocopherol levels. Studies performed with non-healthy women were excluded, as well as those found

Download English Version:

<https://daneshyari.com/en/article/4154001>

Download Persian Version:

<https://daneshyari.com/article/4154001>

[Daneshyari.com](https://daneshyari.com)