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Preterm mothers' milk contains less antioxidants than mothers completing their gestation

February 17th, 2011

A study conducted at the University of Granada and at the University Hospital San Cecilio revealed

that preterm mothers' milk contains low concentrations of coenzyme Q10. This is a complex of great medical importance, due both to its antioxidant capacity and to its role as a component of the electron transport chain, among other functions.

This study counted with the participation of a group of researchers of the Institute of Nutrition and Food Technology "José Mataix" (from to the Andalusian Government research groups AGR-145 and CTS-627), and with the collaboration of the Department of Pediatrics of the University Hospital San Cecilio of Granada, Spain.

The main objective of this study was to analyze the presence of coenzyme Q10 in breast milk and to examine variation in Q10 concentrations in the three stages of breast milk (colostrum, transitional and mature milk). The second goal was to determine whether the milk of mothers at term and that of preterm mothers have different Q10 concentrations.

30 Breastfeeding Mothers

To carry out this study, researchers selected 30 nursing mothers, 15 of which had completed their gestation and 15 were preterm mothers. Three milk samples were taken from each mother: colostrum, transitional and mature milk. Participants were asked to complete a questionnaire about their eating habits, which was processed later with software developed by the Institute of Nutrition and Food Technology "José Mataix", of the University of Granada. The milk samples were examined to measure -among other parameters- concentrations of coenzyme Q, tocopherol (isomers a, g and d) and the total antioxidant capacity of breast milk.

The study revealed colostrum CoQ10 concentrations of about 0.4 µmol/l in preterm mothers and 0.7 µmol/l in term mothers. This means that CoQ10 concentrations in mothers at term are 75% higher than in preterm mothers. Similar results were obtained regarding tocopherol.

Perfect Food

Scientists stress that while breast milk is the perfect food for all newborns, as it provides the nutrients needed for proper development and growth, "in some cases, breastfeeding is not possible and infants are fed with artificial nutrition. Artificial nutrition is intended to be as similar as possible to human breast milk, or at least, to have the same functional effects as breast milk. This requires a deeper understanding of the composition of human breast milk". This is what makes the results obtained of this research so relevant.

Antioxidants

And, although some antioxidants as tocopherol, carotenoids, ascorbic acid, etc. are known, "there are components with antioxidant activity which concentration and presence in breast milk is completely unknown. Coenzyme Q10 -which is an antioxidant of great importance- belongs to this group".

The researchers believe that their study will make an important contribution to the area of infant nutrition. "Having a deep understanding of the factors and components of human milk is paramount, as it can help in getting a better infant milk formula. This way, although a newborn can not benefit from breast milk, at least it will be given the opportunity to artificially benefit from the advantages of human milk" -the authors state.

Provided by University of Granada