3rd International Conference on Nutrition & Growth

Vienna, Austria, March 17-19, 2016

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Abstract Book

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Committees

Chairpersons and Organizing Committee

Moshe Phillip, Israel
Raanan Shamir, Israel
Dominique Turck, France

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Faisal Ahmed, UK
Christophe Dupont, France
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Andrew Prentice, UK
Lars Savendahl, Sweden
Virginia Stallings, USA
Hania Szajewska, Poland
Hans Van Goudoever, The Netherlands
Jan-Maarten Wit, The Netherlands

General Information

Conference Venue

Reed Messe Wien GmbH
Congress Center
Messeplatz 1
Vienna, Austria
T: +43 1 727 20-0
F: +43 1 727 20-2359
E: congress@messe.at

Language

English is the official language of the Conference.

Registration

Desks will operate as follows:

Thursday, March 17	10:00 – 20:15
Friday, March 18	07:30 - 19:15
Saturday, March 19	07:30 - 16:45

Name Badge

Upon registration you will receive your name badge. Please wear your badge during the Conference in order to access the session halls and Exhibition Area.

Clothing

Attire, throughout the Conference, is casual and informal.

Mobile Application

Install the N&G 2016 interactive Mobile App on your smartphone and portable devices to access all of the information you could need during and after the Conference.

- See the overview of sessions, speakers and exhibitors
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Neonatal & Prematurity

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EFFECTS OF PASTEURIZATION ON REDOX PROPERTIES OF COLOSTRUM AND MILK FROM MOTHERS OF PRETERM INFANTS

N. Lugonja[1], S. Spasić[1], S. Miletić[1], S. Minić[2], A. Nikolić Kokić[3], V. Marinković[4], M. Vrvić[2]
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[4]University Children's Hospital, Neonatology Department, Belgrade, Serbia

Background and Aims
Donated milk represents a desirable alternative to formula feeding, especially for preterm infants. Milk banks collect both preterm and term human milk and apply pasteurization to remove possible infectious contaminants.

We examined the effects of pasteurization on redox properties of milk from mothers of preterm infants and its fractions.

Method
Electron paramagnetic resonance spectroscopy of hydroxyl-radical generating Fenton system was applied to analyze redox properties of milk from mothers of preterm infants and its fractions (skim milk and whey) and reactive products of oxidation of ascorbate and uric acid in the milk.

Results
Colostrum showed drastically higher capacity for hydroxyl radical removal compared to transient and mature milk from mothers of preterm infants. The signal of ascorbic radical was very weak in pasteurized milk, whereas the intensity of urate radical adduct was higher compared to fresh milk. A significant negative correlation is present ($R = -0.797$ $p < 0.0001$) between signal intensities of urate radical adduct and ascorbic radical only in pasteurized milk.

Conclusion
Milk from mothers of preterm infants has high redox capacity, and it is a very important for growth and development of premature infants. However, redox capacity decrease during lactation, and pasteurization appears to undermine the redox properties of the milk.

Acknowledgments

This work was supported by Grants 173014 and 43004 by the Ministry of Education, Science and Technological Development of the Republic of Serbia**.**

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Donated milk represents a desirable alternative to formula feeding, especially for preterm infants. Milk banks collect both preterm and term human milk and apply pasteurization to remove possible infectious contaminants.

Aims

We examined the effects of pasteurization on redox properties of milk from mothers of preterm infants and its fractions.

Methods

Milk was obtained from ten mothers of preterm infants (gestational age 28-36 weeks; birth weight 900-2,470 g). Milk samples were obtained within the first 4 days after delivery (colostrum), from day 4 to two weeks (transient), and 6 weeks and later (mature milk). Electron paramagnetic resonance spectroscopy of hydroxyl-radical generating Fenton system was applied to analyze redox properties of milk from mothers of preterm infants.

Results

Colostrum showed drastically higher capacity for hydroxyl radical removal compared to transient and mature milk from mothers of preterm infants. The signal of ascorbic radical was very weak in pasteurized milk, whereas the intensity of urate radical adduct was higher compared to fresh milk (Fig. 1). A significant negative correlation is present ($R = -0.797$ $p < 0.0001$) between signal intensities of urate radical adduct and ascorbic radical only in pasteurized milk.

Conclusion

Milk from mothers of preterm infants has high redox capacity (Fig. 2), and it is a very important for growth and development of premature infants. However, redox capacity decrease during lactation, and pasteurization appears to undermine the redox properties of the milk.

Acknowledgments
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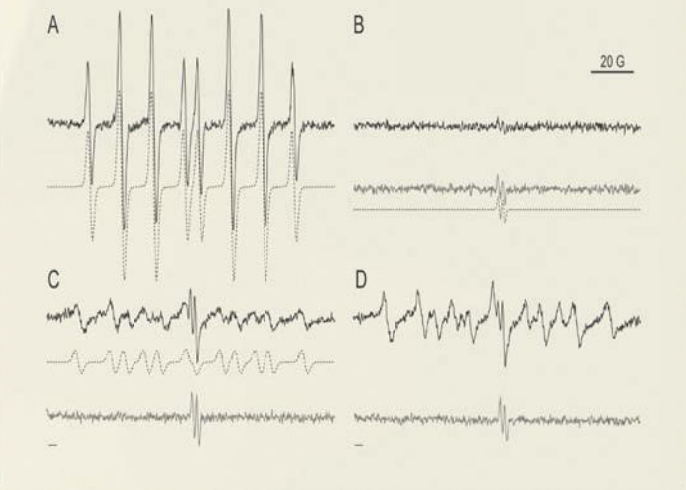

Figure 1. EPR spectra and quantification of redox activity of colostrum and milk exposed to hydroxyl radical-generating system. (A) Control system – Fenton reaction: $Fe2+$ (0.6 mM) + $H2O2$ (3 mM). Dotted line – simulation of EPR signal of DEPMPO/OH (signal intensity was 2685 ± 384 AU). (B) Colostrum exposed to Fenton reaction. No clear signal of DEPMPO adducts could be identified. Gray line – EPR spectrum obtained in the same system in the absence of spin-trap. Dotted line – simulation of EPR signal of Asc•. (C) Fresh milk exposed to Fenton reaction. Dotted line – simulation of EPR signal of DEPMPO/UA. (D) Pasteurized milk exposed to Fenton reaction. Black bars – colostrum; white bars – untreated milk; gray bars – pasteurized milk. * – significant compared to untreated human milk at 0 day ($p < 0.05$).

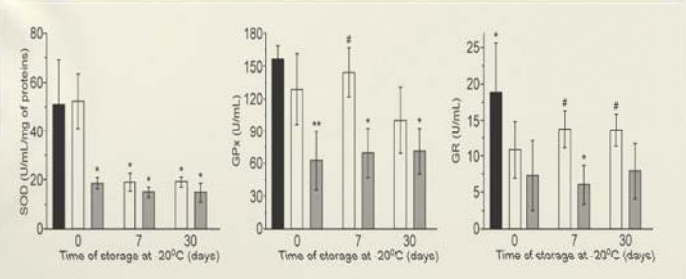

Figure 2. Redox settings in colostrum, and raw and pasteurized human milk. (A) SOD activity; (B) GPx activity; (C) GR activity. Black bars – colostrum; white bars – untreated milk; gray bars – pasteurized milk. * – significant compared to untreated human milk (0 day; * $p < 0.05$; ** $p < 0.001$). # – significant compared to pasteurized milk at the same (7 or 30) day of storage at -20° C.