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Data Article

Clinical and biochemical data of endothelial function in Women Consuming Combined Contraceptives

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ABSTRACT

The data presented in this article are associated with the research article entitled “Heme-Nitrosylated Hemoglobin and Oxidative Stress in Women Consuming Combined Contraceptives. Clinical Application of the EPR Spectroscopy” (Lobysheva et al., 2017 [1]), and describe the characteristics of redox status in blood, as well as biochemical and clinical parameters of young female subjects consuming (or not) contraceptive pills (CP). Erythrocyte concentration of reduced thiols reflecting erythrocyte redox capacity was measured before and after sample deproteinization by electron paramagnetic resonance spectroscopy (EPR) using a nitroxide biradical spin probe specifically interacting with reduced thiols; additional data were obtained by a colorimetric method using Ellman's reagents in the same samples. The products of nitric oxide oxidation, nitrite and total NO_x (in presence of nitrate reductase) were measured in the plasma of study subjects by a colorimetric assay based on the detection of red-violet colored azo dye after reaction of nitrite with the Griess reagent. Biochemical and clinical parameters reflective of cardiovascular risk factors (diastolic blood pressure, C-reactive protein, triglycerides and homocysteine

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concentrations in venous blood) were compared in subgroups of consumers of CP containing ethinyl estradiol and different types of synthetic progestogens. Parameters reflective of the integrity of the vasculature, - erythrocyte concentration of heme-nitrosylated hemoglobin (5-coordinate α -heme-Fe^{II}-NO, HbNO) measured directly by the EPR subtraction method; index of reactive hyperemia response (FRHI) measured by digital pulse tonometry using EndoPAT; oxidative vascular stress measured as total plasma peroxide concentration were compared in subgroups of young women taking CP containing ethinyl estradiol at different concentrations and for various durations.

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Specifications Table

Subject area	<i>Biology</i>
More specific subject area	<i>Biomedical science, Endothelial function</i>
Type of data	<i>Figures, Text file</i>
How data was acquired	<i>Redox status in human erythrocytes and plasma was assayed using EPR spectroscopy (Bruker X-band EPR spectrometer, EMX-micro) and colorimetric assays using SpectraMax i3 (Molecular Devices, LLS, USA); integral endothelial function was assayed by Microplethysmography using peripheral arterial tonometer (Endo-PAT, Itamar, IL)</i>
Data format	<i>Raw, Analyzed</i>
Experimental factors	<i>Erythrocytes and plasma were separated immediately after venous blood collection from female participants and were processed for biochemical assays and/or stored at -80°C for subsequent measurements by EPR spectroscopy of HbNO and reduced thiols, or peroxide assay</i>
Experimental features	<i>Isolated erythrocytes of young female participants consuming or not contraceptive pills were analyzed for the contents of heme-nitrosylated hemoglobin by EPR and of the small molecules containing reduced thiol groups using EPR spin probe and Ellman's reagents; plasma of participants was analyzed for the content of nitric oxide metabolites and total biological peroxides.</i>
Data source location	<i>Institut de Recherche Experimentale et Clinique; Cliniques Universitaires Saint-Luc, Université Catholique de Louvain; Bruxelles; Belgium</i>
Data accessibility	<i>Data are presented in the article</i>

Value of the data

- The data compare the quantitative detection of reduced thiol by electron paramagnetic resonance spectroscopy (EPR) in blood samples using a spin probe and a well-characterized colorimetric method using Ellman's reagent, highlighting a new method for precise detection of redox status in erythrocytes applicable to multiple clinical conditions.
- The data provide concentrations of total NOx (nitrite + nitrate) in plasma of female subjects consuming or not contraceptive pills and, by comparison with other techniques, allow to evaluate the accuracy (or lack thereof) of this method for the assessment of the activity of the NO synthase pathway in clinical studies.
- Comparative measurements of diastolic blood pressure, C-reactive protein, triglycerides, and homocysteine concentrations in control female subjects and subjects consuming CP containing

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