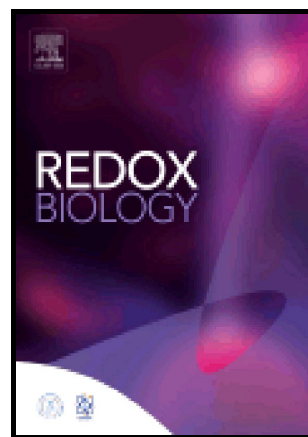


Author's Accepted Manuscript

The relationship between standard reduction potentials of catechins and biological activities involved in redox control

Monika Baranowska, Klaudia Suliborska, Wojciech Chrzanowski, Barbara Kusznierevicz, Jacek Namieśnik, Agnieszka Bartoszek



www.elsevier.com/locate/redox

PII: S2213-2317(18)30246-5
DOI: <https://doi.org/10.1016/j.redox.2018.05.005>
Reference: REDOX922

To appear in: *Redox Biology*

Received date: 28 March 2018
Revised date: 1 May 2018
Accepted date: 12 May 2018

Cite this article as: Monika Baranowska, Klaudia Suliborska, Wojciech Chrzanowski, Barbara Kusznierevicz, Jacek Namieśnik and Agnieszka Bartoszek, The relationship between standard reduction potentials of catechins and biological activities involved in redox control, *Redox Biology*, <https://doi.org/10.1016/j.redox.2018.05.005>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

The relationship between standard reduction potentials of catechins and biological activities involved in redox control

Monika Baranowska^{a*}, Klaudia Suliborska^b, Wojciech Chrzanowski^b, Barbara Kusznierewicz^a, Jacek Namieśnik^c, Agnieszka Bartoszek^a

^a Department of Chemistry, Technology and Biotechnology of Food, Gdansk University of Technology, Gdansk, Poland

^b Department of Physical Chemistry, Gdansk University of Technology, Gdansk, Poland

^c Department of Analytical Chemistry, Gdansk University of Technology, Gdansk, Poland

*Corresponding author: Monika Baranowska, Department of Chemistry, Technology and Biotechnology of Food, Narutowicza 11/12, 80-233 Gdansk, tel.: +48 535 089 347, monbaran1@student.pg.gda.pl

Abstract

Redox homeostasis involves factors that ensure proper function of cells. The excess reactive oxygen species (ROS) leads to oxidative stress and increased risk of oxidative damage to cellular components. In contrast, upon reductive stress, insufficient ROS abundance may result in faulty cell signalling. It may be expected that dietary antioxidants, depending on their standard reduction potentials (E^0), will affect both scenarios. In our study, for the first time, we systematically tested the relationship among E^0 , chemical properties, and biological effects in HT29 cells for a series of structurally different catechins and a major endogenous antioxidant – glutathione (GSH), at both physiological and dietary concentrations. Among chemical antioxidant activity tests, the strongest correlation with E^0 was seen using a DPPH assay. The values of E^0 were also highly correlated with cellular antioxidant activity (CAA) values determined in HT29 cells. Our results indicated that physiological concentrations (1-10 μM) of tested catechins stabilized the redox status of cells, which was not exhibited at higher concentrations. This stabilization of redox homeostasis was mirrored by constant, dose and E^0 independent CAA values, uninhibited growth of HT29 cells, modulation of hydrogen peroxide-induced DNA damage, as well as effects at the

Download English Version:

<https://daneshyari.com/en/article/8286455>

Download Persian Version:

<https://daneshyari.com/article/8286455>

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