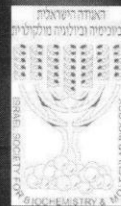
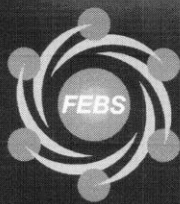


The FEBS Journal



Volume 284 Supplement 1 September 2017 | ISSN 1742-464X

www.febsjournal.org



42ND FEBS CONGRESS

FROM MOLECULES TO CELLS AND BACK

10-14 September, 2017 | Jerusalem, Israel



FEBS PRESS
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POSTERS

Table of Contents

Monday 11 September

- 104 Synthetic Biology
- 108 DNA Damage and Repair
- 118 Proteomic Approaches in Cell Biology
- 120 Molecular Basis of Diseases
- 150 Signaling Across Membranes: Receptors, Channels and Transporters
- 165 CRISPR and RNA Processing and Regulation
- 174 Mechanisms for Protein Homeostasis
- 177 Organelle Biogenesis and Dynamics
- 179 Integrated Structural Biology for Innovative Translational Research
- 180 Education, Training, and Career Planning in Molecular Life Sciences

Tuesday 12 September

- 180 Protein Dynamics and Interactions
- 205 Molecular Machines in Action
- 211 Protein Folding and Misfolding
- 218 Chromatin Structure and Epigenetic Modifications
- 228 Redox Regulation of Biological Activities
- 234 Systems Biology
- 241 Molecular Neuroscience

Wednesday 13 September

- 254 Cancer Biology
- 293 Translational Control and mRNA Localization
- 297 Protein Degradation
- 305 Autophagy
- 307 Structural Computational Biology
- 320 The Structural Organization of the Cell

Thursday 14 September

- 321 Intrinsically Disordered Proteins
- 322 Medicinal Chemistry
- 345 The Human Microbiome
- 347 Metabolism and Signaling
- 373 Miscellaneous

Abstracts submitted for the main call for abstracts to the 42nd FEBS Congress (Jerusalem, Israel; September 10–14, 2017) and accepted by the Congress Organizing Committee, as well as abstracts from invited speakers for the event, are published in this Supplement to *The FEBS Journal*. Late-breaking abstracts are not included in this supplement.

About these abstracts

Abstracts submitted to the Congress are **not peer-reviewed**. In addition, abstracts are published as submitted and are **not copyedited** prior to publication.

We are unable to make **corrections of any kind** to the abstracts once they are published.

Indexing

Abstracts published in *The FEBS Journal* Supplement for the 42nd FEBS Congress will be included individually in the Conference Proceedings Citation Index published by Web of Science.

How to cite these abstracts

AuthorOne, A., AuthorTwo, B. (2017). Abstract title. FEBS J, 284: Abstract number*. doi:10.1111/febs.14174

NADPH indicates that although hypericin binds to the GSSG site it is a huge molecule and it also affects the binding of NADPH because GSSG and NADPH sites are close to each other.

P.3.3.A-009

Antidepressant fluoxetine inhibits baker's yeast glutathione reductase

E. Bright Asuquo, O. Dalmizrak, I. H. Ogun, N. Ozer
Department of Medical Biochemistry, Faculty of Medicine, Near East University, Nicosia, TRNC, 99138, Mersin 10, Turkey

Glutathione reductase (E.C. 1.6.4.2) has a central role in detoxification due to the fact that its ability to regenerate the reduced glutathione (GSH) which is a central antioxidant molecule from oxidized glutathione (GSSG) by using NADPH. GSH scavenges and eliminates superoxide and hydroxyl radicals non enzymatically or functions as an electron donor to several enzymes. Fluoxetine is an antidepressant drug and is known to carry out its action as a selective serotonin re-uptake inhibitor (SSRI) by blocking serotonin transporter. In this study, we investigated the interaction of fluoxetine with glutathione reductase (GR) purified from baker's yeast. The optimum temperature, optimum pH and energy of activation were determined to characterize the enzyme. The purity of the enzyme was also confirmed by electrophoresis. In the presence of fluoxetine, GR activity was followed at fixed 1 mM [GSSG]-variable [NADPH] and fixed 0.1 mM [NADPH]-variable [GSSG]. Single protein and activity bands were obtained on native PAGE. GR also gave single band on SDS-PAGE with a Mr of 49 kDa. Optimum pH, optimum temperature, activation energy and Q_{10} were found as 7.65, 57°C, 3,544 calories and 1.26, respectively. GR was inhibited by fluoxetine in a dose dependent manner and from Hill plot IC_{50} was calculated as 0.88 mM. When the variable substrate was GSSG, linear-mixed type competitive inhibition was observed with fluoxetine. K_s , K_i and α values were calculated as $111 \pm 5 \mu\text{M}$, $279 \pm 32 \mu\text{M}$ and 5.48 ± 1.29 , respectively. On the other hand, at variable NADPH, the inhibition type was noncompetitive, K_m and K_i values were $13.4 \pm 0.8 \mu\text{M}$ and $879 \pm 82 \mu\text{M}$, respectively. Linear-mixed type competitive and noncompetitive inhibitions suggest that fluoxetine binds to a site between GSSG and NADPH binding sites but much closer to the GSSG site. Thus, it competes with GSSG binding but then noncompetitive inhibition with variable NADPH can be explained by the conformational change of the enzyme.

P.3.3.A-010

The effect of biologically active substances from *Inula britannica* and *Limonium gmelinii* on the antioxidant status in liver tissue of laboratory mice

S. Kolumbayeva¹, A. Lovinskaya¹, S. Abilev²
¹Al-Farabi Kazakh National University, Almaty, Kazakhstan,
²Vavilov Institute of General Genetics Russian Academy of Sciences, Almaty, Russia

Most environmental pollutants have toxic and mutagenic effects on organisms as a result of activation of free radical formation and inhibition of DNA repair system. The increased formation of free radicals leads to an increase in lipid peroxidation (LPO). In this regard, search for protectors from the effects of xenobiotics is becoming urgent challenge. Many biologically active substances (BAS) of natural origin are potential antioxidants and can increase resistance to toxic and mutagenic effects of a wide range of pollutants. The aim of the research was to study the

antioxidant potential of BAS from medicinal plants *Inula britannica* (Compositae) and *Limonium gmelinii* (Plumbaginaceae). The oxidant and antioxidant potential of plant extracts were determined by lipid hydroperoxides (LHP) and malondialdehyde (MDA) content in mice liver by the extraction-spectrophotometric method. Unsymmetrical dimethylhydrazine (UDMH) was used as an oxidant, known for its toxic and genotoxic effects. It was found that UDMH statistically significantly enhanced LPO in intoxicated animals compared to intact animals. The LHP and MDA content with single intraperitoneal exposure to UDMH at dose of 6.6 mg/kg increased by 3.55 ($P < 0.01$) and 1.84 ($P < 0.05$) times, respectively. The LHP and MDA content with long-term (10-day) exposure were higher of 4.02 ($P < 0.01$) and 2.07 times ($P < 0.01$), respectively. In mice taking BAS from *I. britannica* and *L. gmelinii* at doses of 50.0; 100.0 and 150.0 mg/kg, the content of LPO products were at the control level. It indicates that the BAS at the used doses had no oxidant activity. The combined effect of BAS and UDMH on mice showed statistically significant decrease of the LPO level, induced by UDMH, to the control level. Thus, the extracts from *I. britannica* and *L. gmelinii* have antioxidant activity in laboratory mice. Currently, the plant extracts are being tested for antigenotoxic activity.

The work was done within the framework of the MES project (No.GR 0115RK00378).

P.3.3.A-011

The use of redox active natural substances in the treatment of deoxynivalenol poisoning

J. Vašková, D. Zátka, M. Haus, L. Vaško
Faculty of Medicine, Pavol Jozef Šafárik University in Košice, Košice, Slovakia

It is evident from our recent in vivo study (10-week experiment on the toxicity of lead acetate (1/30 LD₅₀), that humic acids at a dose 0.5 and 1% are either efficient in lowering oxidative stress load as seen in decrease in superoxide dismutase activity, or in the mechanisms of reversing the adverse peroxidation effect of lead and effort to eliminate this metal by chelation in cooperation with reduced glutathione. The occurrence of mycotoxins produced by spp. *Fusarium* (mostly deoxynivalenol, DON) in food and feed ranges from 43–74% in EU countries. The aim was to investigate the possibility of preventing and treating poisoning with DON by applying these natural substances permitted by the EMEA, and monitoring the selected oxidative stress markers in plasma, liver, heart, kidney tissue. The experiment (Ro-2559/16-221) included a total of 72 Sprague Dawley male rats, and lasted for 4 weeks. The animals were divided into 6 groups thus allowing to monitor the effects of the administered compounds. DON was fed in the feed mixture at doses exceeding 100% and 200% limiting values, and humic acid at 1%. DON intoxication led to a significant decrease in the levels of reduced glutathione, more in the heart than liver but also in kidney, and almost as well for both dosages. The activity of glutathione peroxidase also declined markedly. We found increased glutathione reductase activity in the heart and kidneys at a 100%, but low at 200% DON overdose. In plasma, the values of the above parameters were not significantly altered except for superoxide dismutase. The activities of glutathione-transferase, associated with resistance to apoptosis and carcinogenesis, were increased most significantly. Histochemical detection of Hsp 70 is currently under way. Concomitant administration of humic acids led to the approximation of enzyme activities to those in the control group. The correction was less noticeable in 200% DON overdose. The study was supported by VEGA 1/0782/15.