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Editors:
Marija Raguž / University of Split, Croatia
Balaraman Kalyanaraman / Medical College of Wisconsin, USA
Tadeusz Sarna / Jagiellonian University, Poland
Nada Ilić / University of Split, Croatia
Danijel Nejašmić / University of Split, Croatia
Jane Thelaner / Medical College of Wisconsin, USA

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Mediterranean Institute for Life Sciences (MedILS)
Meštrovićevo šetalište 45, 21000 Split, Croatia
T: +385 (0)21 555 600 / F: +385 (0)21 555 605 / E: medils@medils.hr

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Dear Symposium Registrants,

On behalf of the Organizing Committee, it is our pleasure to extend a warm welcome to the First Adriatic Symposium on Biophysical Approaches in Biomedical Studies. We have assembled a scientific program addressing many topics: structure, dynamic and function of membrane systems and proteins, role of oxidative stress in human diseases, detection and imaging of free radicals, and drug transport in membranes. We have combined some of the most prominent contributors from the joint fields with complementary but overlapping strengths. The program is an excellent opportunity for learning and is designed to encourage interaction and discussion.

The purpose of the Symposium is to share the latest technological developments in various biomedical applications, stimulate innovative research, train young scientists, postdoctoral fellows, graduate students from Croatia and abroad, and enable future scientific collaborations among meeting participants.

The First Adriatic Symposium on Biophysical Approaches in Biomedical Studies is jointly organized by the University of Split, the Medical College of Wisconsin, and Jagiellonian University, at the wonderful venue, the Mediterranean Institute for Life Sciences. The Symposium would not have been possible without the generous support of our many sponsors. We are grateful for their investment in scientific research and education.

We hope you will take time to explore the ancient and vibrant city of Split, which offers plenty of restaurants, bars, shopping and sightseeing under a dramatic mountain backdrop sweeping towards the Adriatic Sea. Stroll the picturesque harbor-front promenade, visit its museums and galleries, or swim at any of its popular beaches; there is something for everyone in Split.

We thank you for your participation, and we hope that you enjoy the First Adriatic Symposium on Biophysical Approaches in Biomedical Studies!

Balaraman Kalyanaraman, PhD
Medical College of Wisconsin
Milwaukee, WI, USA

Marija Raguz, PhD
School of Medicine
University of Split
Split, Croatia

Tadeusz Sarna, PhD
Jagiellonian University
Krakow, Poland
Organizing Committee

Marija Raguž, PhD
Department of Medical Physics and Biophysics
School of Medicine
University of Split
Soltanska 2
21 000 Split, Croatia
T: +385-21-557-827
F: +385-21-557-895
E: marija.raguz@mefst.hr

Balaraman Kalyanaraman, PhD
Department of Biophysics
Medical College of Wisconsin
8701 Watertown Plank Road
Milwaukee, WI 53226 USA
T: 414-955-4000
E: balarama@mcw.edu

Tadeusz Sarna, PhD
Department of Biophysics
Jagiellonian University
ul. Gronostajowa 7
30-387 Kraków, Poland
T: +46-12-664 6427
F: +48-12-664 6901
E: tadeusz.sarna@uj.edu.pl

Nada Ilić, PhD
Department of Physics
Faculty of Science - University of Split
Teslina 12, 21000 Split, Croatia
T: +385-21-385-286, local 118 or 140
F: +385-21-384-086
E: nada@pmfst.hr
Investigation of the Reaction of Baicalein and Fisetin with Hydroxyl Radical

Marković Z\(^{1,2}\), Milenković D\(^{2}\), Djorović J\(^{2}\), Amić D\(^{3}\), Lučić B\(^{4}\)

\(^{1}\)Department of Chemical-Technological Sciences, State University of Novi Pazar, Vuka Karadžića bb, 36300 Novi Pazar, Republic of Serbia

\(^{2}\)Bioengineering Research and Development Center, 34000 Kragujevac, Republic of Serbia

\(^{3}\)Faculty of Agriculture, The Josip Juraj Strossmayer University, P.O. Box 719, HR-31107, Osijek, Croatia

\(^{4}\)NMR Center, Rudjer Bošković Institute, P.O. Box 180, HR-10002 Zagreb, Croatia

The uncontrolled action of hydroxyl radicals can have devastating effects within the body since it reacts at diffusion rates with virtually any molecule found in its path including macromolecules such as DNA, membrane lipids, proteins and carbohydrates [1,2]. Naturally occurring flavonoid molecules, fisetin (2-(3,4-dihydroxyphenyl)-3,7-dihydroxychromen-4-one) and baicalein (5,6,7-trihydroxy-2-phenyl-4H-chromen-4-one) were investigated theoretically for their ability to scavenge hydroxyl radical. Reaction enthalpies for the reaction of fisetin and baicalein with hydroxyl radical, related to three mechanisms of free radical scavenging activity (hydrogen atom transfer - HAT, single electron transfer followed by proton transfer - SET-PT and sequential proton loss electron transfer - SPLET), were calculated using the M05-2X/6-311+G(d,p) model, in polar protic (water, ethanol) and aprotic (DMSO, DMF) solvents. Calculated energy requirements for the reactions of investigated molecules and hydroxyl radical point to HAT and SPLET as operative radical scavenging mechanisms in all solvents. The C4'-OH group of fisetin is the most favoured site for homolytic and heterolytic O–H breaking in all solvents. On the other hand, C6-OH and C7-OH groups of baicalein are the most reactive sites for the HAT and SPLET mechanisms, respectively (Figure 1).

Figure 1. HAT and SPLET radical scavenging mechanisms of baicalein and fisetin.


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