3rd Symposium of Young Researchers on Pharmacognosy

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BOOK OF ABSTRACTS

University of Szeged
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Studies on biomimetic oxidized resveratrol metabolite mixtures

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Resveratrol, though reported for a myriad of pharmacological activities, has low systemic bioavailability due to extensive phase I and II biotransformation. While numerous reports are available on the structure and bioactivities of glucuronidated and sulfated conjugates of resveratrol [1-2], limited knowledge is available on the metabolites formed via oxidation. Although it has a minor effect on toxic reactive oxygen species levels in living systems, resveratrol can directly scavenge free radicals due to its chemical structure, resulting in the generation of new metabolites with altered bioactivities. [3]. The oxidation of resveratrol through various chemical reactions, including biomimetic approaches, resulted in several mixtures that exhibited greater bioactivities compared to the parent compound. Mixtures were tested for *in vitro* antioxidant activities (DPPH, ORAC), and inhibitory action on lipoxygenase, xanthine oxidase, and angiotensin converting enzymes. Using a multi-step chromatographic isolation procedure and spectral analysis, 20 compounds were obtained in pure form. Isolated compounds included dimers, chlorine-, iodine-, ethoxy- and benzofuran derivatives. Antioxidant and xanthine oxidase inhibitory studies show that chlorine- and iodine-substituted compounds exhibited greatest bioactivities, with molecular docking simulations showing the importance of these substituents. Dimers, ethoxy- and benzofuran- derivatives, exhibited the greatest inhibitory activity on lipoxygenase enzyme. All groups of metabolites showed enhanced activity in inhibiting angiotensin converting enzyme. Additional studies to further explore the cardioprotective and anti-inflammatory properties are currently ongoing.

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