

Formal paper abstracts and speaker profiles

Session VIII: Mechanism of wine components

Antioxidant and anti-inflammatory effects of wine

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Prof. Mladen Boban was awarded his medical doctor and Ph.D. degree at the University of Zagreb, and did his postdoctoral fellowship at the Medical College of Wisconsin, USA. He has been a head of the Department of Pharmacology at the University of Split School of Medicine since 1997, and served as a dean and a vice-dean. In the last 13 years focus of his scientific interest is mostly on the biological effects of wine and its derivatives. Currently, his funded project focuses on the influence of vinification technology, dealcoholisation and aging on different biological effects of wine. Prof. Boban was the Croatian delegate to the International Organization of Vine and Wine (OIV) and President of the Commission "Safety and Health" from 2009-2012. In the period 2013-2016 prof. Boban served his second term as president of the Croatian Pharmacological Society.

Abstract

Inflammation and oxidative stress are interdependent and mutually reinforcing phenomena implicated in pathogenesis of many diseases. Therefore, anti-inflammatory and antioxidant effects of wine have been proposed to be important contributors to the beneficial effects of moderate wine consumption on human health. However, exact mechanisms, sites of action and relative contribution of different biological responses associated with wine consumption to the observed anti-inflammatory and antioxidant effects are far from clear.

Common perception that wine phenolics acting as chemical antioxidants is the primary mechanism responsible for the mentioned effects of wine is oversimplified and insufficient.

Here we discuss several other mechanisms which may contribute to the overall antioxidant and anti-inflammatory effects of wine:

1. Role of wine phenolics acting locally in the gastrointestinal tract as the most important site of antioxidant action. There they may: a) prevent generation and absorption of toxic products of lipid oxidation, thereby counteracting postprandial oxidative stress and inflammatory responses, and b) act prebiotically influencing growth of the favorable gut microbiota associated with health benefits to the host, including reduction of endotoxemia and systemic inflammation.
2. Increase in the plasma antioxidant capacity after wine consumption, as the specific metabolic response to the non-phenolic constituents of wine. This is primarily mediated by moderate and transient increase of the potent antioxidant in plasma, the uric acid.
3. The para-hormesis concept and role of wine phenolics in activating cellular antioxidant defense system by mimicking effects of endogenously produced electrophiles.