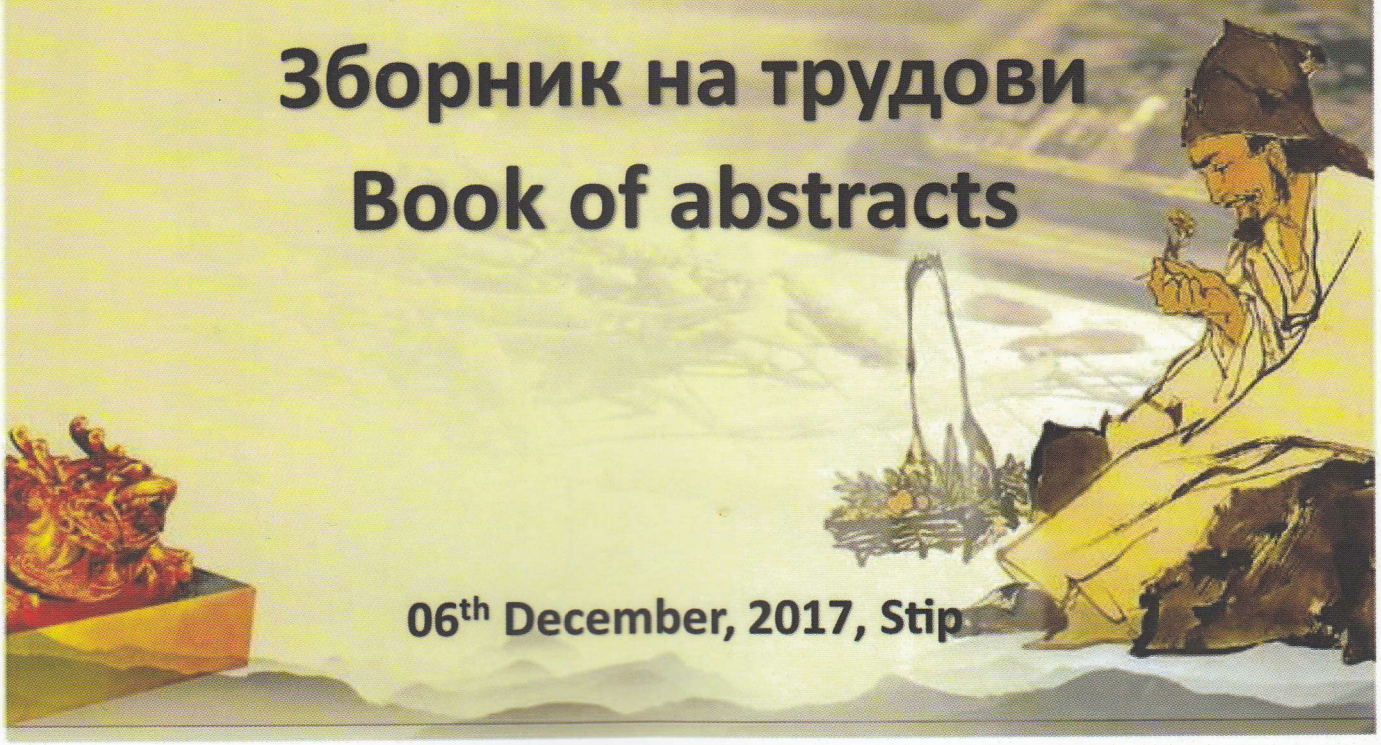
University "Goce Delchev" Stip, Macedonia
Faculty of Medical Sciences

FIRST INTERNATIONAL SYMPOSIUM FOR TRADITIONAL CHINESE MEDICINE

"THE BODY IS YOUR TEMPLE - KEEP IT PURE AND CLEAN FOR THE SOUL TO RESIDE IN"

Qi energy and medicine

气功与医学



Зборник на трудови

Book of abstracts

06th December, 2017, Stip

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Plant Food Bioactives: from Total Antioxidant Capacity to Gene Expression and Beyond

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Abstract

Since the introduction of the concept of oxidative stress as an imbalance between reactive oxygen species (ROS) and cellular antioxidant network, an immense scientific evidence has been accumulated showing and confirming the connection between the oxidative stress and various human diseases. However, meta-analyses of randomized controlled trials demonstrated no evidence to support supplementation with low-molecular weight antioxidants (vitamin C, vitamin E and β-carotene) for primary or secondary prevention. These data called into question the oxidative stress theory itself, and several important issues have been raised, including causality, oversimplification (indeed, ROS and free radicals have an important role in cell signaling) and patient stratification, which opened new perspectives in redox biology.

Regarding other plant food bioactives, in the first place polyphenols, which are abundantly present in our diet, it became clear that their in-vitro antioxidant activity is not a direct determinant of their in-vivo effects. Indeed, bio-availability of dietary polyphenols is very low. Moreover, they are subjected to an extensive in-vivo metabolism, which further diminishes their free radical scavenging capacity. Today, our understanding is that most of their in-vivo antioxidant activity is mediated through the transcription factor Nrf2, which is responsible for mobilization of cellular antioxidant defense, and cellular protection in general.

Besides Nrf2, or more precisely its regulator – the Keap1 protein, polyphenols target a plethora of biomolecules with far reaching biological effects, which are still under investigation. In addition, the observation of significant inter-individual variability in the response to consumption of plant food bioactives, and various determinants involved (microbiome, genetic factors, gender, age, chronic diseases etc.), has attracted much

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attention recently. This is an exciting and promising area of research, especially in ageing societies and populations with high prevalence of non-communicable diseases.