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BOOK of ABSTRACTS

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BOOK OF ABSTRACTS

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Preface

The 24th Congress of SCTM is a biannual presentation of the newest achievements in several disciplines of chemistry, technology, engineering and education of fundamental and applicative research. The large number of abstracts, presented in 15 conference sections (organic chemistry and technology, analytical chemistry, physical chemistry, biochemistry, electrochemistry, spectroscopy and structural chemistry, materials science and technology, polymers, environmental, bio- and food technology, medical and pharmaceutical chemistry and engineering, fuel and energy, textile, metallurgy, education) clearly demonstrate the broad scope of problems addressed by the Congress. Over the past years our aim has always been to bring to one place scientists and engineers from different scientific fields, encourage the exchange of ideas and know-how, as well as to promote new contact and cooperation.

The Book of Abstracts of the 24th Congress of SCTM contains 265 publications, from over 150 authors from 15 countries, presented in oral and poster sections. On behalf of the Scientific and Organizing Committees we would like to thank all of the sponsors who contribute to the success of the Congress and the publishing of this book, as well as to the support of the Ministry of Education and Science and the Organization for the Prohibition of Chemical Weapons.

Last but not least, we would like to thank all participants for enriching the Congress.

Elena Tomovska, Scientific Committee

Zagorka Koneska, Organizing Committee

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COMPARATIVE DETERMINATION OF BIOGENIC AMINES BY HPLC-DAD AND UPLC-TQ/MS TECHNIQUES: ADVANTAGES AND DISADVANTAGES

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Biogenic amines are organic nitrogen compounds with low molecular weight whose presence plays a vital role in oenology. They can be found in the grape must, but they can also be formed by yeast during alcoholic and malolactic fermentation, as well as during wine aging. Their presence in wine at high levels can lead to health problems. The most important biogenic amines in wine are tryptamine (TRP), putrescine (PUT), histamine (HIST), phenylethylamine (PEA), tyramine (TYR), cadaverine (CAD), spermine (SPM) and spermidine (SPD). The mostly used technique for determination of biogenic amines in wine is pre-column derivatization with dansyl chloride (DnsCl) and reversed phase-high performance liquid chromatography with diode array detector (RP-HPLC-DAD) [1]. Ultra-performance liquid chromatography (UPLC) coupled with triple quadruple detector mass spectrometer (TQ/MS) is recently introduced technique for biogenic amines analysis. The aim of this study was to compare the performances and critical validation points of two validated methods (HPLC-DAD and UPLC-TQ/MS), such as linearity, recovery, repeatability and reproducibility in order to point out their advantages and disadvantages and to choose right method for the laboratory purposes. It was found that the main advantages of the UPLC-TQ/MS method are direct injection of the wine samples without previous sample preparation with total run time of 5 min and lower LOQ. Thus, the LOQ for histamine determined with UPLC-TQ/MS and RP-HPLC-DAD was 1.50 μg/L and 20 μg/L, respectively. On the other hand, 45 min derivatization of biogenic amines is required for sample preparation and 30 min analyses run time for the RP-HPLC-DAD. In general, both methods are characterized with good linearity ($R^2 > 0.9950$), satisfactory recovery, repeatability and reproducibility.

Key words: wine; biogenic amines; HPLC/DAD; UPLC-TQ/MS.

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[1] Tašev K., Ivanova-Petropulos V., Stefova M. (2016). Optimization and validation of a derivatization method for analysis of biogenic amines in wines using RP-HPLC-DAD. *Macedonian Journal of Chemistry and Chemical Engineering*, accepted for publication.