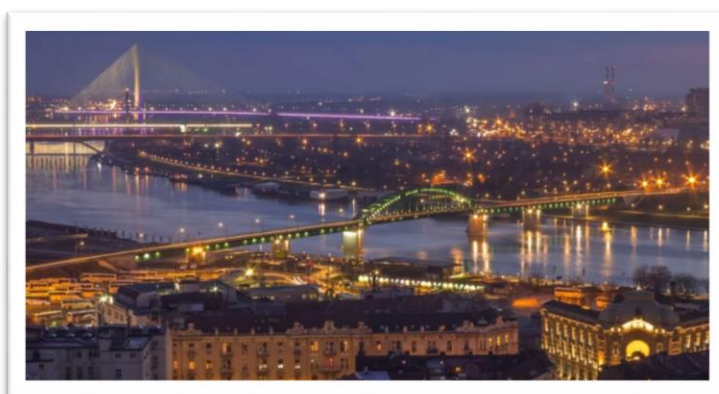
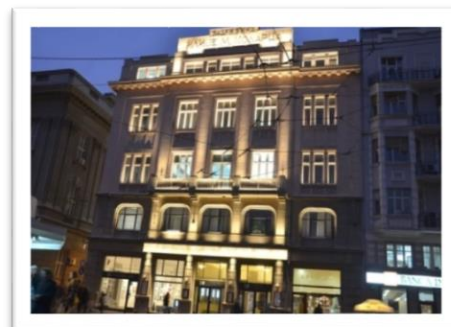




3rd FoodEnTwin Workshop: Innovative research in food and environment Book of Abstracts

June 15, 2021
Belgrade, Serbia



Scientific committee

Tanja Cirkovic Velickovic (Chair)

Dusanka Milojkovic-Opsenica (Co-Chair)

Andreja Rajkovic

Michelle Epstein

Marianne van Hage

Tatjana Parac-Vogt

Hans Groendlund

Guro Gafvelin

Andrea Urbani

Paola Roncada

Irena Vovk

Organizing Committee

Sanja Grguric-Sipka

Maja Gruden

Jelena Mutic

Dragana Stanic-Vucinic

Katarina Smiljanic

Marija Stojadinovic

Ivana Glisic



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 810752

Session 4: Impact of COVID-19 on research and innovation of modern analytical methods

Invited lecture

SEROLOGICAL ELISA TEST DEVELOPMENT AT THE INEP INSTITUTE

***Marija Lj. Gnjatovic*^{1*}, Teodora P. Djukic², Dragana J. Stanic-Vucinic², Jelena Z. Radosavljevic², Katarina T. Smiljanic², Ljiljana Z. Sabljic¹, Danica R. Cujic¹, Tamara D. Vasovic², Ana S. Simovic², Aleksandra N. Todorovic¹, Maja S. Mladenovic², Mirjana Z. Radomirovic², Tanja D. Cirkovic Velickovic²**

¹University of Belgrade, Institute for the Application of Nuclear Energy - INEP, Belgrade, Serbia

²University of Belgrade - Faculty of Chemistry, Belgrade, Serbia

* Corresponding author: marijad@inep.co.rs

The COVID-19 diagnostic tools are categorized into two main groups of Nucleic Acid (NA)-based and protein-based tests. To date, nucleic acid-based detection has been announced as the gold-standard strategy for coronavirus detection; however, protein-based tests are promising alternatives for rapid and large-scale screening of susceptible groups. During the first months, no rapid and reliable detecting tool was readily available to adequately respond to the requirement of massive testing. The aim was to develop cost-effective, sensitive and rapid screening mechanisms for the detection of immune response to SARS-CoV2 (which causes COVID-19), based on the principle of ELISA. The institute INEP has developed tests for detection of IgM and IgG SARS-CoV-2 specific antibodies based on S and N proteins of virus intended to monitor different phases of natural infection, ELISA test for IgG detection in natural infection based on the use of exclusively domestic components of the ELISA kit (including proteins produced in Serbia, Faculty of Chemistry) and a test specifically designed to monitor the effects of immunization (determination of IgG antibodies specific for the RBD domain of S protein). The tests were independently validated at the relevant laboratories in the country and abroad, and compared to an FDA/WHO approved tests of a major test producers. All testing for validation was carried out on samples collected before COVID19 (negative controls), PCR confirmed COVID19 samples (positive controls) and potentially cross-reactive samples (other pathogens and autoimmune diseases). The antibody tests showed high levels of sensitivity and specificity and extremely low background noises. The kits are extremely stable, have a shelf life of 1 year and opened kits are usable up to 3 months at storing temperatures of 5°C.

Keywords: ELISA, Covid-19, SARS-CoV-2

Acknowledgements: This work is the contribution to the Government of the Republic of Serbian. Ministry of Education, Science and Technological Development of the Republic of Serbia and UNDP funded Project Titled: "Sustainable production of serological IgG test for SARS CoV-2 in Serbia", Project Number: 00121484/2020-02.