

## RAPID HIGH THROUGHPUT METHOD FOR ANTIMICROBIAL AND ANTI-BIOFILM ACTIVITY DETECTION

### Fields of use

Chromatographs and related laboratory equipment, In vitro Testing, Trials Microbiology, Other speciality materials, Special chemicals, intermediates, Virus, Virology, Antibiotics/Bacteriology, Food Microbiology, Toxicology, Quality Control Analyses, Test Facilities and Methods

### Current state of technology

Available for demonstration

### Type of cooperation

License agreement, Technical cooperation agreement

### Intellectual property

Patent(s) applied for but not yet granted

### Developed by

Jožef Stefan Institute

### Contact

Jožef Stefan Institute,  
Jamova cesta 39,  
1000 Ljubljana,  
Slovenija

Phone: + 386 1 47 73 224

E-mail: [tehnologije@ijs.si](mailto:tehnologije@ijs.si)

Web site: <http://tehnologije.ijs.si/>



### Summary

A Slovenian research institute and an university have developed a novel method for measurement of antimicrobial and anti-biofilm activity. The method is rapid and enables simultaneous detection of the antimicrobial and anti-biofilm activities. Partners are sought amongst companies that test compounds for antibacterial and antibiofilm activity and producers of spectrophotometers for technical cooperation agreements and license agreement to apply the technology in their production.

### Description of the invention

More than 700,000 people die each year due to drug resistant infections, and it is estimated that this number could increase to 10 million people per year by 2050. Altogether, food-borne illnesses represent a global public health problem that affects an estimated 600 million people annually (WHO). The search for new active compounds with antimicrobial and anti-biofilm activities requires extensive screening studies. Biofilm formation is a persistence strategy for microorganisms, and has a role for colonization of both abiotic and biotic surfaces. Control of biofilm formation might represent a better option in the fight against bacteria, especially due to increasing occurrence of antimicrobial resistance (AMR). To avoid the disastrous impact of AMR we urgently need alternative strategies for combating infectious diseases. Moreover, precise understanding of mechanisms of action and distinguishing between antimicrobial versus anti-biofilm activities will enable us to better control the spread of AMR and help reduce its occurrence. None of the existing methods can simultaneously determine antimicrobial and anti-biofilm activities in a relatively short time.

A Slovenian research institute and university have developed a method for identifying a compound or a composition of compounds that have either antibacterial and/or antibiofilm activities against a bacterium of interest. The method involves determining the growth of the microorganisms by measuring the optical density in intervals during the incubation. The method could be applied as software application alone or as a part of a spectrophotometer used for antibacterial and anti-biofilm measurement.

Both organizations are renowned Slovenian research organizations. The research groups have extensive experience in microbial biotechnology and food microbiology.

The research institute and university are looking for industrial partners for technical cooperation agreement and license agreement. Industrial partners should be companies that test compounds for antibacterial and anti-biofilm activity. Alternatively, industrial partners sought are producers of spectrophotometers, used in such companies. Within the technical cooperation agreement, the partner sought shall jointly with Slovenian university and institute apply the method in their production process. If the partner successfully implements the method in his production process, he will be invited for the commercialization of its results.

## Main Advantages

None of the existing methods can simultaneously determine antimicrobial and antibiofilm activities in a relatively short time. The method enables simultaneous detection and differentiation of the antimicrobial and/or anti-biofilm activities of a composition or a compound analysed in less than 20 hours.

## Partner Sought

Type:

- Companies that test compounds for antibacterial and anti-biofilm activity.
- Producers of spectrophotometers, used in such companies.

Role: The role of partner sought is to apply the method for simultaneous determination of antimicrobial and anti-biofilm activities in their production process within a technical cooperation agreement. If the partner is able to implement the method successfully, they will be invited for the commercialization of its results.