

Detection of bacteria using gold nanoparticles immunossensor

Name: Debora Colombi, Amanda Claro & Nathalia Jacomin
Genotyping Biotechnology, Botucatu, SP - Brazil

Blood stream infections (BSI) are severe diseases causing high morbidity and mortality and are a major public health problem worldwide. The effective diagnosis of the microorganisms causing BSI is the most critical and most difficult problem in the treatment of blood infections.

Currently, the gold standard for diagnosis is blood culture, however there are a number of disadvantages associated with this method including the fact that it is time consuming (up to 5 days for results) and has low sensitivity. These issues are associated with a delay in administration of the first adequate anti-infectious agent, resulting in a mortality rate as high as 60%.

Genotyping Biotechnology started to develop a method able to evaluate bacterial contamination with two premises: rapid result (minutes) and capable to identify some important bacteria.

Our solution aims at the production of a kit for rapid monitoring and identification of contaminant microorganisms based on immunosensor colorimetric change. Biosensors based on gold nanoparticles can be bio conjugated with various ligands such as nucleic acids and antibodies. After the bio conjugation, they start forming aggregates, which shifts the absorption band to ca. 600–800 nm. This change can be observed by the naked eye or measured quantitatively with an ultraviolet-visible spectrophotometer

Here we present a cheap and simple colorimetric method for detection of *Lactobacillus sp*. and *Staphylococcus aureus* using gold nanoparticles modified with antibody to produce an immunosensor. This detection system had a detection limit of 10^2 cfu/mL for both microorganisms in less than 10 minutes.

Biography

Débora Colombi is a Brazilian entrepreneur who founded two companies: Genotyping and BPI. She has degree in Biomedicine from UNIFESP and a Masters' and PhD degree in Biochemistry and Molecular Biology from USP and a post doctorate in Genetics from UNESP. The objective of her actual project is the development of a kit for the detection of bacterial contaminants present in the fermentation tanks of sugarcane industries. The company is already expanding the kit to other markets to facilitate the identification of contaminants *in loco*. Her companies offer genomic solutions for researchers and other companies, in addition to human genetic diagnoses. To know a little more, please go to: www.genotyping.com.br and www.bpibiotecnologia.com.br

E-mail: **debora@genotyping.com.br**

Presenting author details

Full name: Débora Colombi
Contact number: 55 14 981157013
Twitter account:
Linked In account:
Session name/ number: Bacterial Identification Methods / 6
Category: Poster presentation