

POSTER PRESENTATION

MICROBIOLOGY & HOST-PATHOGEN INTERACTIONS

SESSION 5 | POSTER 10

Method for identification of microorganisms using hyperspectral microscopy

Akhatova F.S., Nigamatzyanova L.R., Naumenko E.A., Fakhruллин R.F

Institute of Fundamental Medicine and Biology, Kazan Federal University, Russia

Traditional methods for detection of microorganisms, such as culture methods, enzyme immunoassay, PCR, are widely used for the visualization and identification of microorganisms. Standard methods can be limited for practical use due to their complexity, duration and problems with reliability. Therefore, for practical use with higher productivity it is necessary to create the more sensitive and faster method of microorganisms identification. Hyperspectral imaging is a promising candidate for satisfaction the above requirements for detection of microorganisms in real time with a small amount of biomass. Using the hyperspectral microscopy it is possible to identify the spectral profile unique only for studied organism. Dark field microscopy is an effective method for living and unpainted biological samples, so we used it as a method of illumination in this study. Hyperspectral images were obtained for *Chlorella vulgaris*, *Rhodotorula sp.*, *Escherichia coli* using microscope equipped with CytoViva® dark field condenser and camera. The processing of hyperspectral images was carried out using ENVI 4.8 software. Hyperspectral imaging system is a method that contains spatial and spectral information representing 3D data set. We obtained spectral images, each pixel of

which contains information on the reflected spectrum. All the spectra were normalized by spectral characteristics. Thus, we obtained a spectral profile for the samples in the image field. We collected these data and obtained a spectral library. Expanding and optimizing this spectral library will allow a faster and more accurate determination of the type of microorganism.

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Farida Akhatova
Farida125@mail.ru