DETERMINATION OF RESISTANCE CRITERIA OF M. TUBERCULOSIS TO SECOND-LINE AND RESERVE MEDICATIONS USING LIQUID MEDIA MIDDLEBROOK 7H9 IN BACTEC MGIT 960SYSTEM

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Abstract

Aim: an increase of efficiency and standardization of determination of *M. tuberculosis* drug resistance to second-line and reserve medications using Middlebrook 7H9 culture medium in BACTEC MGIT 960 system.

Materials and methods. BACTEC MGIT 960 system was used. It utilizes the principle of fluorescence registration, which appears in a tube as a result of oxygen absorption from a liquid medium by growing mycobacteria. Fluorescence becomes visible at irradiation of the test tube by ultraviolet light. It is automatically registered by a photosensors. Intensity of fluorescence is directly-proportional to the level of the oxygen spent and measured in growth units (GU).

Results. Methodology of the basic test was developed and the range of antibiotics concentrations was defined. Different concentrations of each compound were tested. The "critical" concentrations of second-line and reserve medications to be tested on solid medium were defined, as they depended on the minimum inhibitory concentration of the antibiotic. The following "critical" concentrations were defined: Et (5,0 mcg/of ml), Cm (2,5 mcg/of ml), Pt (2,5 mcg/of ml), Am (1,0 mcg/of ml), Ofx (2,0 mcg/of ml), Mfx (0,25 mcg/of ml), Lfx (2,0 mcg/of ml); Lzd (1,0 mcg/of ml) for the use in BACTEC MGIT 960.

Conclusions. The "critical" concentrations of second-line and reserve medication (Lzd) were determined to use in Middlebrook 7H9 media in BACTEC MGIT 960 system. New methodology for determination of drug resistance of *M. tuberculosis* to second-line and reserve medications to be used in BACTEC MGIT 960 system was introduced for the third level bacteriological laboratories of TB network in Ukraine.

Key words: *M. tuberculosis*, BACTEC MGIT 960 system, drug resistance to second-line and reserve medications.

Ukr. Pulmonol. J. 2017; 1: 47–52.

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