

KINETICS CORRESPONDING TO THE GROWTH OF MYCOBACTERIUM TUBERCULOSIS IN VITRO UNDER DIFFERENT PHYSICAL METHODS OF IDENTIFICATION

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The recent spread of multidrug resistant *Mycobacterium tuberculosis* strains induces an urgent need for developing lab tests for fast and accurate detection of these isolates. However, different tools have controversies respectively to their accuracy and possibility to reproduce characteristics of bacterial population dynamics itself, not the accompanying indicators, e.g. BACTEC MGIT 960 method accurately demonstrates Gompertz-like dynamics of the fluorescent marker, while spectrophotometry (e.g. OD600) indicates Verhulst-like growth but with a larger uncertainty of data.

Basing on the previous results [1], which prove that different standard models of population dynamics are particular cases, which follow from the multicomponent coupled ODEs, we consider the measurable data as the result of an interplay within the complex system, which includes bacterial biomass growth, bacterial breathing and enzyme production as well as their reactions with optically active markers, build and analyse corresponding models.

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References

- [1] Postnikov E.B. (2015). *Analytical properties of a three-compartmental dynamical demographic model*, Phys. Rev. E, 92, 012718