Rapid Determination of Bacterial Growth via Calorimetry

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In this work, experiments were conducted that used Differential Scanning Calorimetry (DSC) on various bacterial samples with the goal of developing a method for the rapid determination of bacterial growth. Solutions of Lysogeny Broth were inoculated with one of four different bacteria samples (Escherichia coli, Proteus mirabilis, Staphylococcus epidermidis, or Pseudomonas aeruginosa). The experimentation with various temperature programs resulted in the ability to identify bacterial growth via the solution's freezing point. The shift in freezing points could be detected in as few as 40 minutes. Such a technique would be extremely valuable in the medical field to appropriately diagnose conditions that require antibiotics.

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