Birzeit University

**Biology and Biochemistry Department**

**BIOL 243**

**Microbiology Lab**

**Experiment #6**

*Title: Bacterial Population Count*

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**Date of Experiment:2.11.2017**

**Submission Date:23.11.2017**

**Bacterial Population Count**

* **Objective:  
  1-To determine the number of bacteria in a given sample.  
  2-To compare the amount of bacterial growth under various conditions.**
* **Introduction:**Many studies require the quantitative determination of bacterial populations, also to distinguish between the amount of bacterial growth The two most widely used methods for determining bacterial numbers are the standard, or viable, plate count method and spectrophotometric (turbidimetric) analysis. Although the two methods are somewhat similar in the results they yield, there are distinct differences. For example, the standard plate count method is an indirect measurement of cell density and reveals information related only to live bacteria. The spectrophotometric analysis is based on turbidity and indirectly measures all bacteria (cell biomass), dead and alive. The standard plate count method consists of diluting a sample with sterile saline or phosphate buffer diluent until the bacteria are dilute enough to count accurately. That is, the final plates in the series should have between 30 and 300 colonies. Fewer than 30 colonies are not acceptable for statistical reasons (too few may not be representative of the sample), and more than 300 colonies on a plate are likely to produce colonies too close to each other to be distinguished as distinct colony-forming units (CFUs). The assumption is that each viable bacterial cell is separate from all others and will develop into a single discrete colony (CFU). Thus, the number of colonies should give the number of bacteria that can grow under the incubation conditions employed. A wide series of dilutions (e.g., 10-4 to 10-10) is normally plated because the exact number of bacteria is usually unknown. Greater accuracy is achieved by plating duplicates or triplicates of each dilution, although we will not be doing that in this exercise
* **Material and methods:**
* **Results:**
* **Discussion:**
* **Conclusion:**
* **References:**