The bacterium *Pseudomonas fluorescens* is a gram-negative inhabitant of soil, plants, and water surfaces (1). The bacterium also utilizes siderophores to satisfy its need for iron, primarily a siderophore pyoverdine, which is responsible for chelating iron only when concentrations are low (1). Because the siderophore is only active in low iron concentrations, supplementation of growth media with iron should allow a higher maximum growth rate due to the bacteria not having to aliquot metabolic energy to chelating iron.

During initial growth curve measuring, standard LB consisting of NaCl (1M), Yeast Extract (10%), Peptone (10%), and sterile, deionized water. The cultures were run at 37 degrees centigrade for approximately 72 hours, shaken continuously, with optical density reading being taken every 15 minutes. This yielded a standard growth curve (fig.1.1) that was used as a basis for comparison for the iron supplements.

The iron supplements of interest in this experiment were Ferric-Ammonium-Citrate (1M), Ferric Chloride (.5M), and Ferrous Sulfate (.5M). These were chosen due to availability in the lab. It was found that during stock solution preparation, Ferric chloride did not completely dissolve into solution, causing precipitate to for in the wells of the micro titer plate. This was also observed in the Ferric-ammonium-citrate wells, but to a much lesser degree. Each culture was inoculated with 1-μL of iron supplement respectively. This amount was chosen through isolation of the target amount that gave a significant (double) increase in maximum growth rate OD. The cultures were run at the same temperature and time as the standard, and their growth curves are shown in figure 2.2. As can be seen in the figure, ferric chloride yielded the highest maximum growth OD at 1.8595; Ferric-ammonium-citrate yielded the second highest with a maximum growth OD of 1.794; and ferrous sulfate yielded the third highest maximum growth OD of 1.696.

![Fig.2.2. A comparison of the average growth curves for cultures of *P. fluorescens* inoculated with Fe-Amm-Citrate, Ferric Chloride, and Ferrous Sulfate. Cultures were run in the Bioscreen C machine for approx. 72 hours at 37 degrees centigrade, shaken constantly. Optical density readings were taken every 15 minutes.](image)

As shown in the Fig2.2, the Fe-Cl had the highest maximum growth OD, however, the compound precipitated out of solution during growth, causing discrepancies in the OD value. Because of this, the values must be disregarded and considered unreliable. Further testing was done using EDTA an iron chelator, and some improvement was found, but no conclusions can be drawn.

**References**