

**Abstract No: BP-03**

**Determination of the minimum concentration of zinc sulfate that affects to the growth of *Azotobacter beijerinckii* (DSM 378)**

L. C. Thanthrige\* and M. M. Gunawardana

Department of Microbiology, University of Kelaniya, Sri Lanka.

\*lahiru9648@gmail.com

Nitrogen-fixing activity of *Azotobacter* gives considerable contribution to the promotion of soil fertility through the supply of nitrogen for the plant growth. *Azotobacter beijerinckii* is a diazotrophic microorganism. Oxygen inhibits nitrogenase enzyme and stops the nitrogen fixation ability. The polysaccharide layer produced by *Azotobacter beijerinckii* prevents the entry of oxygen to the cell. Zinc Sulfate is used as a common fertilizer in the agriculture to supply Zn for plant growth. The aim of this study was to determine the degree of resistance of *Azotobacter beijerinckii* against various concentrations of Zinc Sulfate. The heavy metal Zinc absorbs in to the polysaccharide layer of *Azotobacter beijerinckii*. The ability of the bacterial strain to grow in a nitrogen- free medium, was confirmed. *Azotobacter beijerinckii* culture with approximate concentration of  $1.5 \times 10^6$  CFU/ml was introduced to media with 10 ppm to 100 ppm concentrations of ZnSO<sub>4</sub> and incubated at 30 °C ± 1 for incubation periods of 48 hours, 72 hours and 96 hours. The growth was determined using optical density value under 600 nm after 48 hours, 72 hours and 96 hours. The growth of *Azotobacter beijerinckii* was drastically reduced in concentrations of ZnSO<sub>4</sub> exceeding 20 ppm in all incubation periods. The concentrations of Zinc Sulfate fertilizer exceeding 20 ppm may affect negatively on the growth of *Azotobacter beijerinckii*.

**Keywords:** *Azotobacter beijerinckii*, Heavy metal, Zinc