Cytotoxicity of Chitin from Diverse Sources

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Abstract

- The toxicity of chitin from various sources and with varying degrees of acetylation to mammalian fibroblast cells was tested.
- Chitin was extracted from cicada shells through deproteinization, demineralization, and bleaching that converts chitin to chitosan.
- There was a decrease in cell viability with increasing concentrations of cicada chitin.

Experimental Procedure

- The source material tested was cicada exoskeletons. These were ground and converted to chitin. The degree of acetylation of the chitin was determined by IR spectroscopy.
- Cells were grown in 25cm^2 culture flasks. Cells were fed with media made of EMEM, horse serum, and Penicillin-Streptomycin-Amphotericin. Once cells reached 80-90% confluency, they were passaged into a 6 well plate.
- Varying volumes of chitin were added to each well, this incubated in the CO^2 incubator for 24 hours. After 24 hours, chitin and media were removed, cells were removed using trypsin. Cells were counted using a hemocytometer and Trypan Blue.

Results

- As seen in Figure 4, increasing chitin concentrations did effect cell viability.

Figure 1: Picture of cells on a hemocytometer under a microscope.

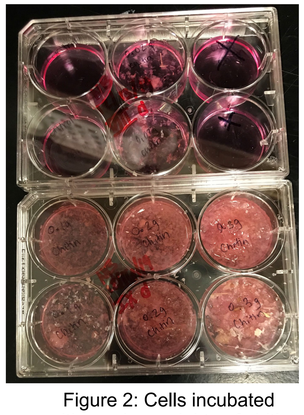

Figure 2: Cells incubated with varying weights of chitin flakes.

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The source material and concentration does have a significant effect on the cytotoxicity of chitin.

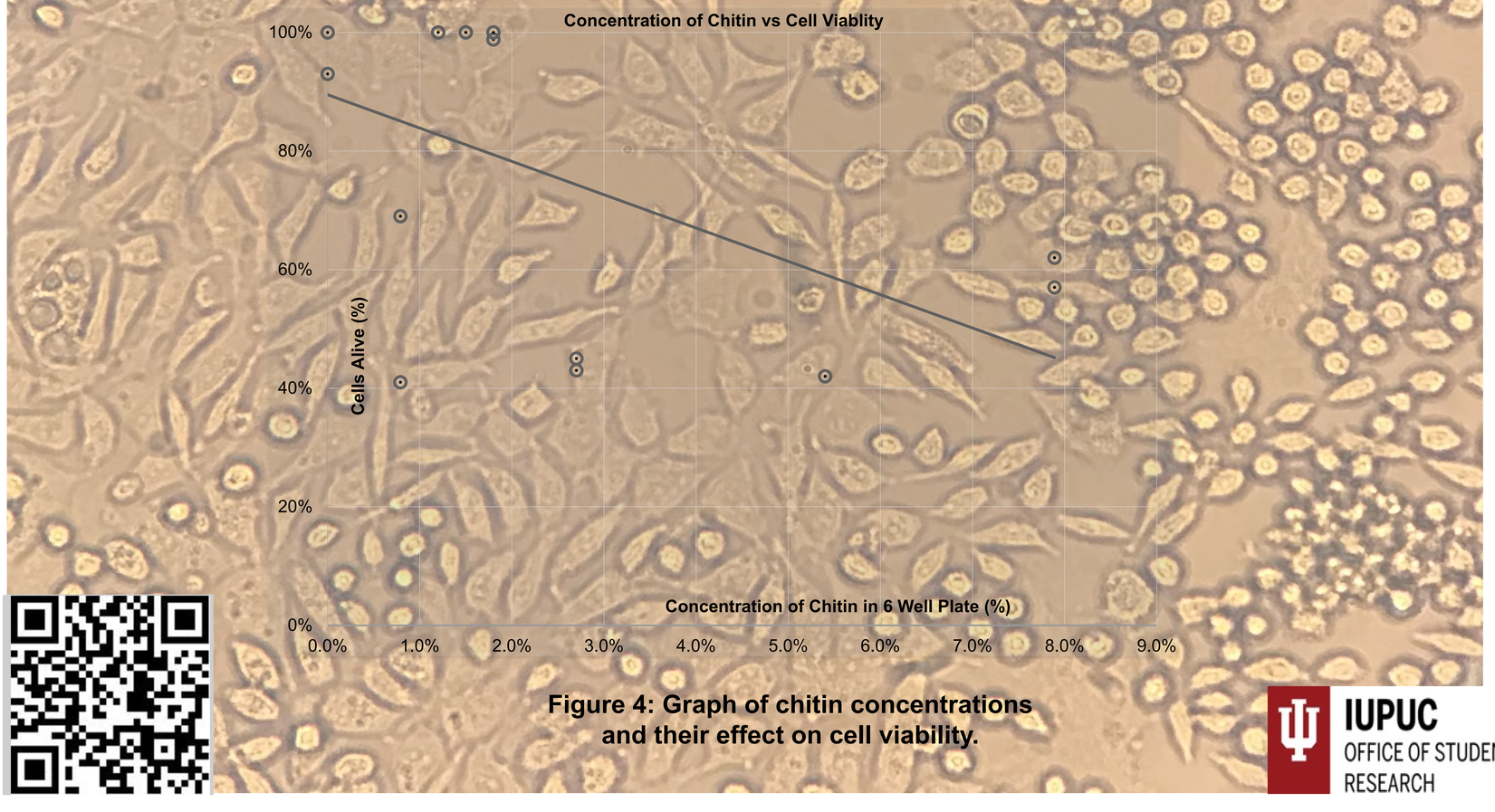

Figure 4: Graph of chitin concentrations and their effect on cell viability.

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