The Effect of Nicotinamide on the Il-6 Expression and Cell Count of Barrett's Esophagus Expressing Cells

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Barrett’s esophagus is a precancerous condition in which the esophageal lining becomes inflamed after repeated exposure to acid reflux. Barrett’s esophagus can develop into esophageal cancer over several years if left untreated. The purpose of my experiment was to test whether Nicotinamide, a cost-effective drug, could help prevent the progression of Barrett’s esophagus into esophageal cancer. Nicotinamide is known to reduce the expression of Il-6 proteins which promote tumorigenesis and are heavily produced by Barrett’s cells. The hypothesis was that if Nicotinamide was applied to cells expressing characteristics of Barrett’s, Il-6 expression levels and the number of treated cells would decrease. First, human esophageal cells were incubated in Deoxycholic Acid to induce the characteristics of Barrett’s. Then a MUC2 ELISA was conducted to ensure the cells released significant amounts of MUC2 protein, a typical characteristic of Barrett’s cells. Next, the cells were incubated in Nicotinamide solution and an Il-6 ELISA was conducted. Il-6 expression significantly decreased in the treated cells. A cell count that was performed next demonstrated a decrease in the number of treated cells. The hypothesis is supported due to the reduced IL-6 expression and the reduction in the number of treated cells. The broader application for this experiment is to bring a cheap, easy-to-access, cancer prevention treatment into the market for Barrett’s esophagus patients.

Awards Won:
Third Award of $1,000