IMMUNOLOGICAL RESPONSE OF DISTAL LUNG CELL LINES TO BREVETOXINS

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Brevetoxins, produced by *Karenia brevis*, are marine algal toxins associated with Florida red tides. Brevetoxin exposure can occur through consumption of contaminated shellfish or toxin inhalation. Various ailments have been documented following brevetoxin inhalation, including lung irritation, cough, wheezing, and congestion. While little is known on how brevetoxins exert these effects in the lung, previous studies have suggested that brevetoxins may have an impact on the lung immune system. In this study, various immunological responses were examined in mouse alveolar epithelial or mouse alveolar macrophage lung cell lines following exposure to 0.5-2 μg/ml brevetoxin-2. Western blotting for surfactant protein-A, a protein involved in lung innate immunity, identified that brevetoxin-2 decreases the amount of secreted SP-A. Cytokine antibody arrays primarily identified a T_H1 response following brevetoxin-2 exposure. Microscopic imaging of macrophages incubated with fluorescently labeled particles indicated that macrophage phagocytosis increases after brevetoxin-2 exposure. These results suggest that brevetoxin-2 alters the immune response in the lung and enhances inflammation. Future work will aim to identify the pathways leading to these altered responses.

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