A Comparison of the Effects of O55:B5 and O111:B4 Lipopolysaccharides from E. coli in RAW 264.7 Murine Macrophages

Baker, Thomas

The purpose of this study was to determine the comparability of two lipopolysaccharides, from Escherichia coli serotypes O55:B5 and O111:B4, in their ability to stimulate the activation of RAW 264.7 murine macrophages. I hypothesized that O55:B5 and O111:B4 lipopolysaccharides would be comparable in their ability to stimulate macrophage activation. I created concentrations of 0, 1, 10, and 100 ng/mL solutions of both O55:B5 and O111:B4 lipopolysaccharides. Lipopolysaccharides were then placed in a well containing 4.0x105 RAW 264.7 macrophages and Dulbecco's Modified Eagle's Medium, totaling 50 µL, and allowed to incubate for 24 hours. Nitrites were then assayed using the Griess Reaction and were compared to a standard curve to extrapolate nitric oxide levels produced by exposure to lipopolysaccharides. Two-tailed p-values of .519, .353, .093, and .582 were obtained, respective to the above concentration groups, when O55:B5 groups were compared to O111:B4 groups using four two-sample t-tests. These values were compared to an alpha value of .05. This indicated that the data were not significant; thus, the research hypothesis was supported by the data and both lipopolysaccharides are indicated to be comparable and interchangeable activators of RAW 264.7 macrophages.

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