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Interactions between U-937 human macrophages and tyloxapol

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Abstract

Tyloxapol is reported to prevent macrophages from reacting to endotoxin. However, the intracellular responses that tyloxapol induces in macrophages are still not fully explored. Hence, the objective of this study was to evaluate the intracellular events in macrophages treated with tyloxapol and assess the antioxidant properties of tyloxapol in endotoxin-activated macrophages. Using flow cytometry, we examined intracellular responses in macrophages: reactive oxygen species (ROS) content, mitochondria membrane potential, and cell cycle profiles.We also assessed the antioxidant properties of tyloxapol in endotoxin-activated macrophages. Kinetic hydrogen peroxide production tended to decline with increasing doses. Tyloxapol produced a progressive increase followed by a decline in superoxide anion production in macrophages with increasing doses. Tyloxapol also caused unstable fluctuations in mitochondrial membrane potential. Apoptosis had developed at higher doses after 4 h of incubation time. After 2 h of tyloxapol-pretreatment, tyloxapol acted as an antioxidant only at lower doses. Most tyloxapol-pretreated cells at lower doses fully recovered from the changes in superoxide anion and hydrogen peroxide production. Our findings contribute to a better understanding of the molecular action of tyloxapol in macrophages and how it protects macrophages against endotoxin.