

# The effect of post-resistance exercise alcohol ingestion on lipopolysaccharide-stimulated cytokines

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## Abstract

### Purpose

To examine the effect of post-resistance exercise alcohol ingestion on lipopolysaccharide (LPS)-stimulated production of IFN $\gamma$ , TNF- $\alpha$ , IL-1 $\beta$ , IL-6, IL-8, and IL-10.

### Methods

Recreationally resistance-trained men ( $n = 10$ ,  $25 \pm 3$  year,  $177 \pm 7$  cm,  $83.8 \pm 15.7$  kg,  $14.8 \pm 8.5$  % body fat) and women ( $n = 8$ ,  $23 \pm 2$  year,  $161 \pm 3$  cm,  $59.5 \pm 6.0$  kg,  $26.5 \pm 3.0$  % body fat) completed two identical heavy back squat sessions ( $6 \times 10$  at 80 % 1 repetition maximum) followed by ingestion of either an alcohol (ALC; 1.09 g ethanol  $\cdot$  kg fat-free mass $^{-1}$ ) or water (PLA) drink. Blood samples were collected before exercise (PRE), and at 3 h (3 h), and 5 h (5 h) after exercise, stimulated with LPS, and analyzed for IFN $\gamma$ , TNF- $\alpha$ , IL-1 $\beta$ , IL-6, IL-8, and IL-10 concentrations.

### Results

There were no drink conditions by time effects for IFN $\gamma$ , TNF- $\alpha$ , IL-1 $\beta$ , or IL-10. Regardless of condition, resistance exercise induce an increase in IFN $\gamma$ , TNF- $\alpha$ , and IL-1 $\beta$  at 5 h compared to PRE but a decrease in IL-10 at 3 and 5 h compared to PRE. For ALC, IL-8 was reduced at 5 h compared to PLA. From PRE to 3 h, IL-6 was reduced for ALC but increased for PLA; resistance exercise induced an increase in IL-6 for both conditions at 5 h.

### Conclusions

Heavy resistance exercise increased production of IFN $\gamma$ , TNF- $\alpha$ , IL-1 $\beta$ , and IL-6 and decreased production of IL-10. Alcohol ingestion after resistance exercise affected aspects of inflammatory capacity (IL-6 and IL-8 production). It appears that some of the effects previously observed for alcohol ingestion alone on the LPS-stimulated cytokine production were overwhelmed by the response to resistance exercise.