Investigating the Anti-Inflammatory Effects of Famotidine

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Recent research on the drug famotidine suggests it may be an affordable, accessible, safe, and effective treatment against COVID-19. Famotidine is a histamine 2 receptor (H2R) antagonist that inhibits gastric acid secretion. Research has shown famotidine has anti-inflammatory effects evidenced through clinical trials in treating COVID-19; however, its implementation is impeded by the lack of understanding of its anti-inflammatory mechanism. Therefore, this study aimed to evaluate famotidine's central anti-inflammatory effects in vitro. First, this study sought to mimic the central mechanism of action by measuring the concentrations of IL-6 and TNF when varying concentrations of famotidine-treated neuronal cell supernatant were administered to RAW 264.7 cells and primary murine macrophages exposed to endotoxin. The results demonstrated famotidine works through neurons to elicit an anti-inflammatory effect on immune cells by reducing the secretion of pro-inflammatory cytokines. This study then investigated whether H2R (the receptor for famotidine) is involved in famotidine's neuron-mediated anti-inflammatory effects on primary murine macrophages. The results showed H2R is not involved in this mechanism. This study furthered the current understanding of famotidine as a potential anti-inflammatory drug. By continuing to piece together famotidine's anti-inflammatory mechanism, we will hopefully be able to implement famotidine as a novel method for treating future pandemics like COVID-19 and tissue-based inflammation more generally.

Awards Won: