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## Hydrogen from intestinal bacteria is protective for Concanavalin A-induced hepatitis

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### Abstract

It is well known that some intestinal bacteria, such as *Escherichia coli*, can produce a remarkable amount of molecular hydrogen (H<sub>2</sub>). Although the antioxidant effects of H<sub>2</sub> are well documented, the present study examined whether H<sub>2</sub> released from intestinally colonized bacteria could affect Concanavalin A (ConA)-induced mouse hepatitis. Systemic antibiotics significantly decreased the level of H<sub>2</sub> in both liver and intestines along with suppression of intestinal bacteria. As determined by the levels of AST, ALT, TNF- $\alpha$  and IFN- $\gamma$  in serum, suppression of intestinal bacterial flora by antibiotics increased the severity of ConA-induced hepatitis, while reconstitution of intestinal flora with H<sub>2</sub>-producing *E. coli*, but not H<sub>2</sub>-deficient mutant *E. coli*, down-regulated the ConA-induced liver inflammation. Furthermore, in vitro production of both TNF- $\alpha$  and IFN- $\gamma$  by ConA-stimulated spleen lymphocytes was significantly inhibited by the introduction of H<sub>2</sub>. These results indicate that H<sub>2</sub> released from intestinal bacteria can suppress inflammation induced in liver by ConA.

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