Butyrate supplementation improves the intestinal health of mice challenged with *Citrobacter rodentium*

Production of short chain volatile fatty acids (SCFA) by bacterial fermentation of complex carbohydrates within the colon is essential for the intestinal function and health. Butyrate is one of the key SCFA produced through fermentation and is not only considered the primary energy source for colonocytes, but influences the presence of populations bacteria within the intestinal microbiome and effects host intestinal immune function by mechanisms that are currently not well understood. This investigation examined the effects of rectally administered butyrate on the intestine of mice following challenge with *Citrobacter rodentium* - a bacterial inducer of intestinal inflammation. Mice treated with butyrate had improved weight gain, reduced histological scores of intestinal injury and increased expression of gene products that were important in resolving the bacterial infection (Th1, Th17, Treg), improving barrier function and enhancing mucosal repair (Muc2, RELMβ, TFF3). The butyrate treated mice also changed the abundance of populations of Proteobacteria, of Clostridiaceae and Lachnospiraceae bacteria. Collectively this study demonstrated that butyrate supplementation improved the intestinal health in mice challenged with *Citrobacter rodentium*.

**Biography**

Richard R. E. Uwiera completed his DVM and PhD in Veterinary Pathology at the University of Saskatchewan and is currently working as Veterinary Pathologist and Associate Professor within the Department of Agricultural, Food and Nutritional Sciences at University of Alberta, Canada. He has published more than 40 manuscripts and 2 book chapters and serves as an editorial board member for an international agricultural journal and prior to working at the University of Alberta; he practiced as a mixed animal veterinary practitioner prior in Western Canada.

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