



Mono-colonization with *Lactobacillus acidophilus* NCFM affects the intestinal metabolome in mice

Roager, Henrik Munch; Sulek, Karolina; Skov, Kasper; Frandsen, Henrik Lauritz; Smedsgaard, Jørn; Wilcks, Andrea; Hjort Skov, Thomas; Granato Villas-Boas, Silas; Licht, Tine Rask

Publication date:
2013

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Roager, H. M., Sulek, K., Skov, K., Frandsen, H. L., Smedsgaard, J., Wilcks, A., Hjort Skov, T., Granato Villas-Boas, S., & Licht, T. R. (2013). *Mono-colonization with Lactobacillus acidophilus NCFM affects the intestinal metabolome in mice*. Abstract from 4th Danish Symposium on Metabolomics, Copenhagen, Denmark.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Abstract for 4th Danish Symposium on Metabolomics

November 15, 2013

Copenhagen

Mono-colonization with *Lactobacillus acidophilus* NCFM affects the intestinal metabolome in mice

Henrik Munch Roager^{1*}, Karolina Sulek^{2,3}, Kasper Skov⁴, Henrik Lauritz Frandsen⁴, Jørn Smedsgaard⁴, Andrea Wilcks¹, Thomas Hjort Skov⁵, Silas Granato Villas-Boas³, Tine Rask Licht¹

¹Division of Food Microbiology, National Food Institute, Technical University of Denmark. ²Liggins Institute, University of Auckland. ³School of Biological Sciences, University of Auckland. ⁴Division of Food Chemistry, National Food Institute, Technical University of Denmark. ⁵Faculty of Health and Medical Sciences, University of Copenhagen. ⁶Department of Food Science, Faculty of Science, University of Copenhagen.

*hemro@food.dtu.dk

Mono-colonization of germ-free (GF) mice enables the study of specific bacterial species *in vivo*. *Lactobacillus acidophilus* is a probiotic strain, however many of the mechanisms behind its health-promoting effect remain unsolved. Here, we studied the effects of *Lactobacillus acidophilus* NCFMTM (NCFM) on the intestinal metabolome (jejunum, caecum, and colon) in mice by comparing NCFM mono-colonized (MC) mice with GF mice by a non-targeted metabolomics approach using liquid chromatography coupled to mass-spectrometry (LC-MS). The study adds to existing evidence that NCFM *in vivo* affects the bile acid signature of mice by deconjugation and dehydroxylation of bile acids. Furthermore, we confirmed that carbohydrate metabolism is affected by NCFM in the mouse intestine. Especially, the digestion of larger carbohydrates (penta- and tetrasaccharides) was increased in MC mice. Interestingly, we also found vitamin E (α -tocopherol acetate) in higher levels in the intestine of GF mice compared to MC mice, suggesting that NCFM either metabolizes the compound or indirectly affects the absorption by changing the metabolome in the intestine. The use of NCFM to increase the uptake of vitamin E supplements in humans and animals is a highly relevant topic for further research.