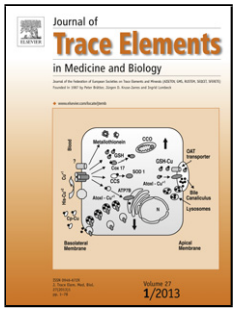
Accepted Manuscript



Title: Oral administration of liquid iron preparation containing excess iron induces intestine and liver injury, impairs intestinal barrier function and alters the gut microbiota in rats

Authors: Shenglin Fang, Zhao Zhuo, Xiaonan Yu, Haichao Wang, Jie Feng

PII: S0946-672X(17)30645-4
DOI: https://doi.org/10.1016/j.jtemb.2018.01.002
Reference: JTEMB 26031

To appear in:

Received date: 21-6-2017
Revised date: 26-12-2017
Accepted date: 9-1-2018

Please cite this article as: Fang Shenglin, Zhuo Zhao, Yu Xiaonan, Wang Haichao, Feng Jie.Oral administration of liquid iron preparation containing excess iron induces intestine and liver injury, impairs intestinal barrier function and alters the gut microbiota in rats.*Journal of Trace Elements in Medicine and Biology* https://doi.org/10.1016/j.jtemb.2018.01.002

Oral administration of liquid iron preparation containing excess iron induces intestine and liver injury, impairs intestinal barrier function and alters the gut microbiota in rats

Shenglin Fang, Zhao Zhuo, Xiaonan Yu, Haichao Wang, and Jie Feng*

Key Laboratory of Molecular Animal Nutrition, Ministry of Education, College of Animal Sciences, Zhejiang University, Hangzhou, China

*Corresponding author

E-mail address: fengj@zju.edu.cn (JF)

Abstract

The aim of this study was to determine the toxicological effects of excess iron in a liquid iron preparation (especially on intestinal barrier function) and the possible etiology of side effects or diseases caused by the excess iron. In study 1, forty male Sprague-Dawley rats (4-5 wk old) were subjected to oral gavage with 1 ml vehicle (0.01 mol/L HCl) or 1 ml liquid iron preparation containing 8 mg, 16 mg or 24 mg of iron for 30 d. Iron status, oxidative stress, histology (H&E staining), ultrastructure (electron microscopy) and apoptosis (TUNEL assay) in the intestines and liver were assessed. The cecal microbiota was evaluated by 16S rRNA sequencing. In study 2,