

FULL TEXT LINKS



Comparative Study [Br J Nutr.](#) 2012 Feb;107(4):485-92. doi: 10.1017/S0007114511003229.

Epub 2011 Jul 15.

## Pectin and high-amylose maize starch increase caecal hydrogen production and relieve hepatic ischaemia-reperfusion injury in rats

Naomichi Nishimura <sup>1</sup>, Hiroki Tanabe, Yumi Sasaki, Yui Makita, Misako Ohata, Saori Yokoyama, Mami Asano, Tatsuro Yamamoto, Shuhachi Kiriyaama

Affiliations

PMID: 21762543 DOI: [10.1017/S0007114511003229](https://doi.org/10.1017/S0007114511003229)

### Abstract

We investigated whether the feeding of high H<sub>2</sub>-generating dietary fibre and resistant starch (RS) could suppress hepatic ischaemia-reperfusion (IR) injury, which results from oxidative stress, in rats fed a pectin (Pec) or high-amylose maize starch (HAS) diet. Male Sprague-Dawley rats were fed a control (C) diet, with or without Pec (0-5 % Pec) or HAS (0-30 % HAS) supplementation for 7 d. Portal H<sub>2</sub> concentration showed a significant dose-dependent increase with the amount of Pec or HAS supplementation. Plasma alanine and aspartate aminotransferase activities remarkably increased in the C rats (5 % cellulose) due to IR treatment, while it decreased significantly or showed tendencies to decrease in 5 % Pec and 20 % HAS diet-fed rats. The hepatic oxidised glutathione (GSSG):total glutathione ratio increased significantly in IR rats maintained on the C diet compared with sham-operated rats. On the other hand, reduced glutathione (GSH):total glutathione and GSH:GSSG ratios decreased significantly. The GSSG:total glutathione ratio that increased due to IR treatment decreased significantly on HAS and Pec intake, while GSH:total glutathione and GSH:GSSG ratios increased significantly. Hepatic sinusoids of IR rats fed the C diet were occluded, but those of IR rats fed the Pec diet were similar to those in the sham-operated rats. In conclusion, we found that Pec or HAS, which enhance H<sub>2</sub> generation in the large intestine, alleviated hepatic IR injury. The present study demonstrates another physiological significance of dietary fibre and RS.

### Related information

[PubChem Compound](#)

[PubChem Compound \(MeSH Keyword\)](#)

[PubChem Substance](#)

### LinkOut - more resources

Full Text Sources

[Cambridge University Press](#)

[Ovid Technologies, Inc.](#)

Other Literature Sources

[The Lens - Patent Citations](#)