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**Proton pump inhibitors alter gut microbiota by promoting oral microbiota translocation**

Xiao X, Zhang X, Wang J, et al. [Proton pump inhibitors alter gut microbiota by promoting oral microbiota translocation: a prospective interventional study](https://gut.bmj.com/content/73/7/1087) Gut 2024; 73: 1098-1109. doi: 10.1136/gutjnl-2023-330883

The mechanism by which proton-pump inhibitors (PPIs) alter the gut microbiome - with potentially adverse effects - is not fully known. Xiao et al., proposed this could occur via PPI-mediated disruption of the gastric acid barrier, which normally prevents the translocation of oral bacteria into the intestine.

The study investigates the alteration of the gut microbiome in healthy volunteers pre- and post-PPI exposure. Sixteen healthy volunteers were randomised to the PP group (esomeprazole 40 mg o.d. 7 days) or PM group (esomeprazole 40 mg o.d. with chlorhexidine mouthwash post-meals for 7 days). 16S ribosomal sequencing was performed on faecal and saliva samples collected pre- and post-PPI exposure. Mouse studies were used to validate the findings.

PPI administration significantly increased the abundance of Streptococcus in the gut, particularly Streptococcus anginosus. The PP group exhibited a 42-fold increase in gut Streptococcus anginosus, whereas the PM group showed only a 16-fold increase, suggesting chlorhexidine mouthwash mitigated this translocation. Microbial source tracking indicated a significant rise in the contribution of oral bacteria to gut microbiota in the PP group (p=0.026), but not the PM group (p=0.467).

Mouse models confirmed that the combination of PPI and Streptococcus anginosus administration led to a higher gut abundance of the bacterium compared to PPI or Streptococcus anginosus alone.

The study concluded that PPIs are associated with dysbiosis by promoting the translocation of oral commensal species into the gut. However, the small sample size and short duration of exposure limits the generalisability of these findings.