



# EFFECTS OF SYNBIOTIC SUPPLEMENTATION ON INTESTINAL PERMEABILITY: A RANDOMIZED CONTROLLED TRIAL

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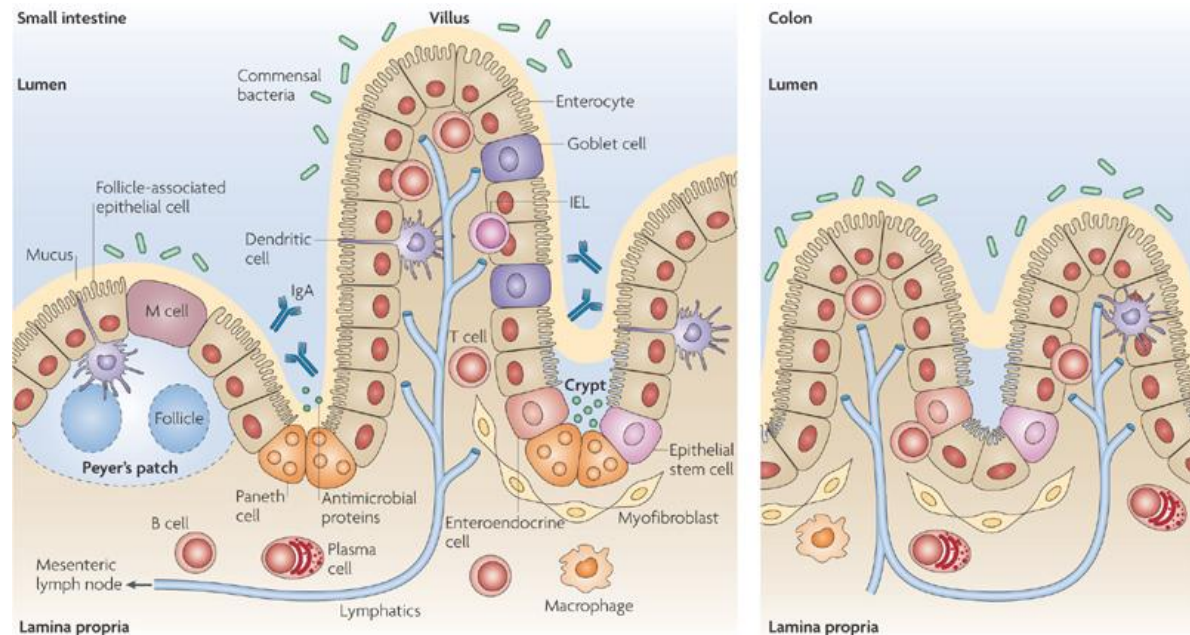


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# Introduction – intestinal barrier

- Epithelial barrier
- Mucus barrier
- Immunological barrier



# Introduction – synbiotics

- Synbiotics: combination of probiotics and prebiotics
- Ecologic<sup>®</sup> 825 + short-chain fructooligosaccharide (scFOS)
  - ↑  
probiotic mixture
  - ↑  
prebiotic
- Ecologic<sup>®</sup> 825 decreased intestinal permeability *ex vivo* in pouchitis patients<sup>1</sup>

# Objective and hypothesis

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## Objective

To assess the effects of two weeks synbiotic supplementation on intestinal permeability *in vivo* in healthy adults

## Hypothesis

Two weeks synbiotic supplementation will reinforce intestinal barrier function, reflected by a decreased intestinal permeability *in vivo*

# Methods – inclusion criteria

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- Twenty healthy adults
- 18 to 65 years of age
- BMI 20-30 kg/m<sup>2</sup>
- No gastrointestinal complaints
- No use of medication
- No smoking

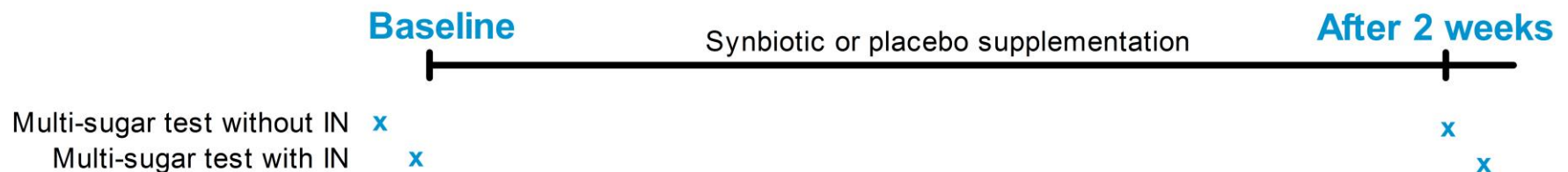
# Methods – study design

- Randomized
- Double-blind
- Placebo-controlled
- Two parallel arms
  - Synbiotic (n=10): 5 g scFOS +  $7,5 * 10^9$  CFU Ecologic<sup>®</sup> 825 \*
  - Placebo (n=10): 5 g maltodextrin + 3 g carrier material
- Two weeks, twice daily

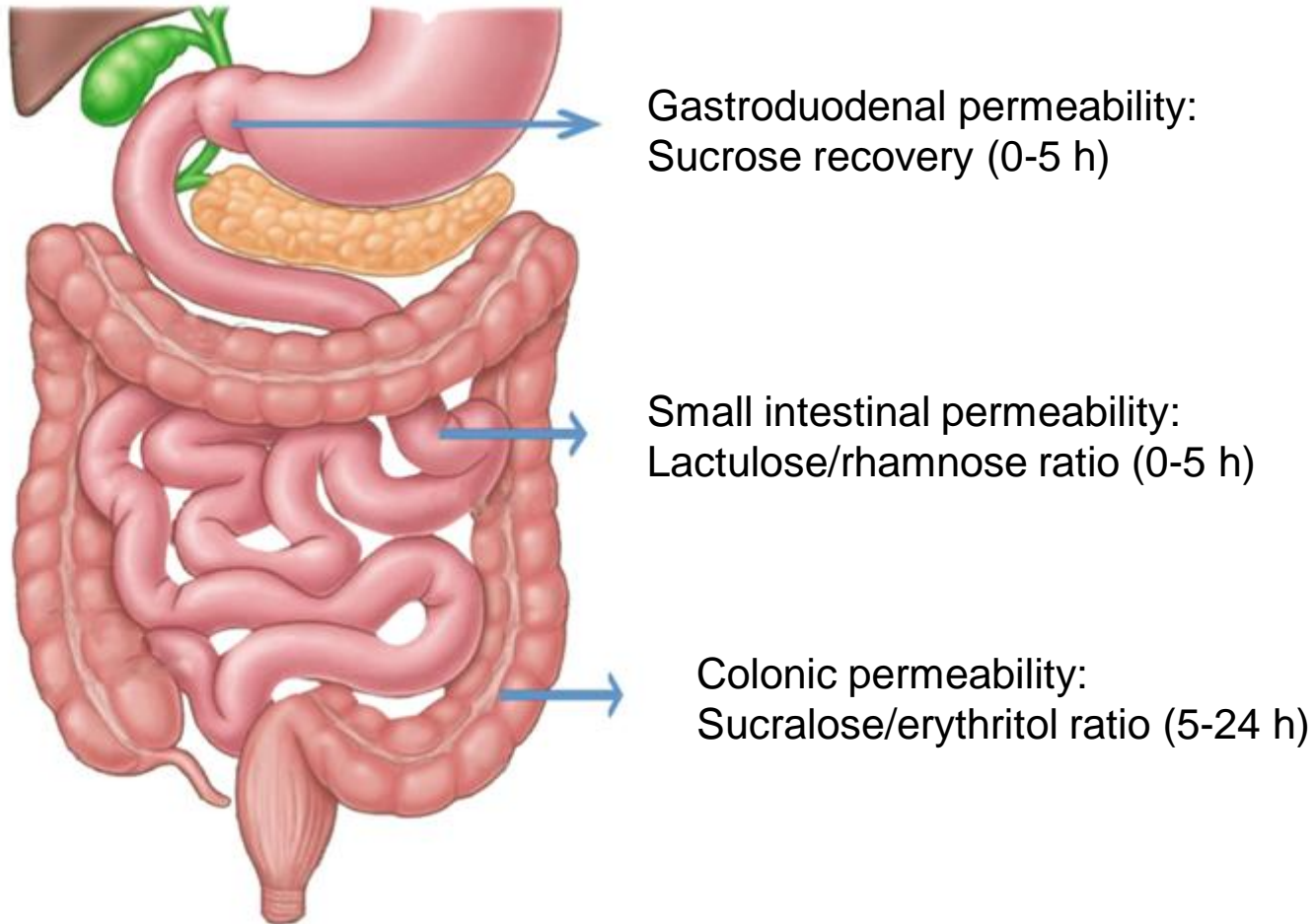
\* Containing *Bifidobacterium bifidum* (W23), *B. lactis* (W51), *B. lactis* (W52), *Lactobacillus acidophilus* (W22), *L. casei* (W56), *L. paracasei* (W20), *L. plantarum* (W62), *L. salivarius* (W24) and *Lactococcus lactis* (W19).

# Methods – intestinal permeability (1)

- Assessed non-invasively by multi-sugar test
- In absence and presence of indomethacin
- Indomethacin is known to induce reversible gastrointestinal damage<sup>2</sup>
- At baseline and after intervention

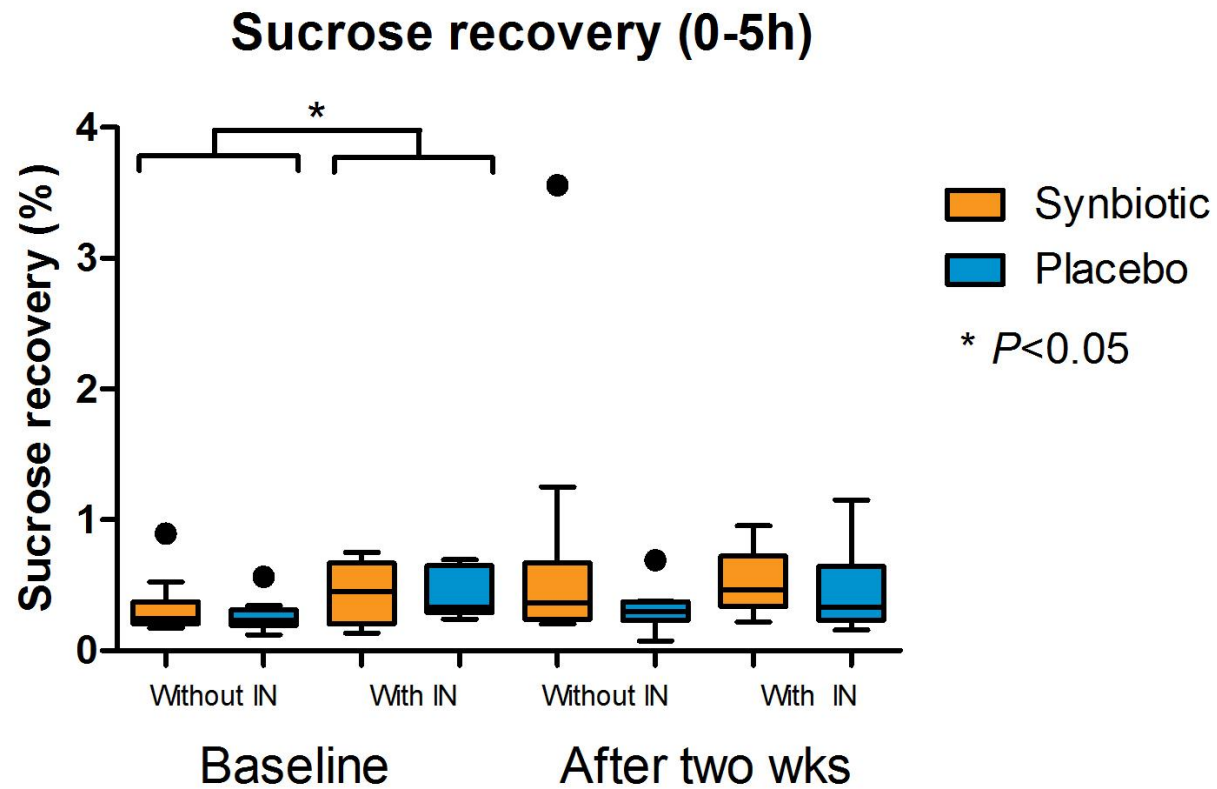


# Methods – intestinal permeability (2)

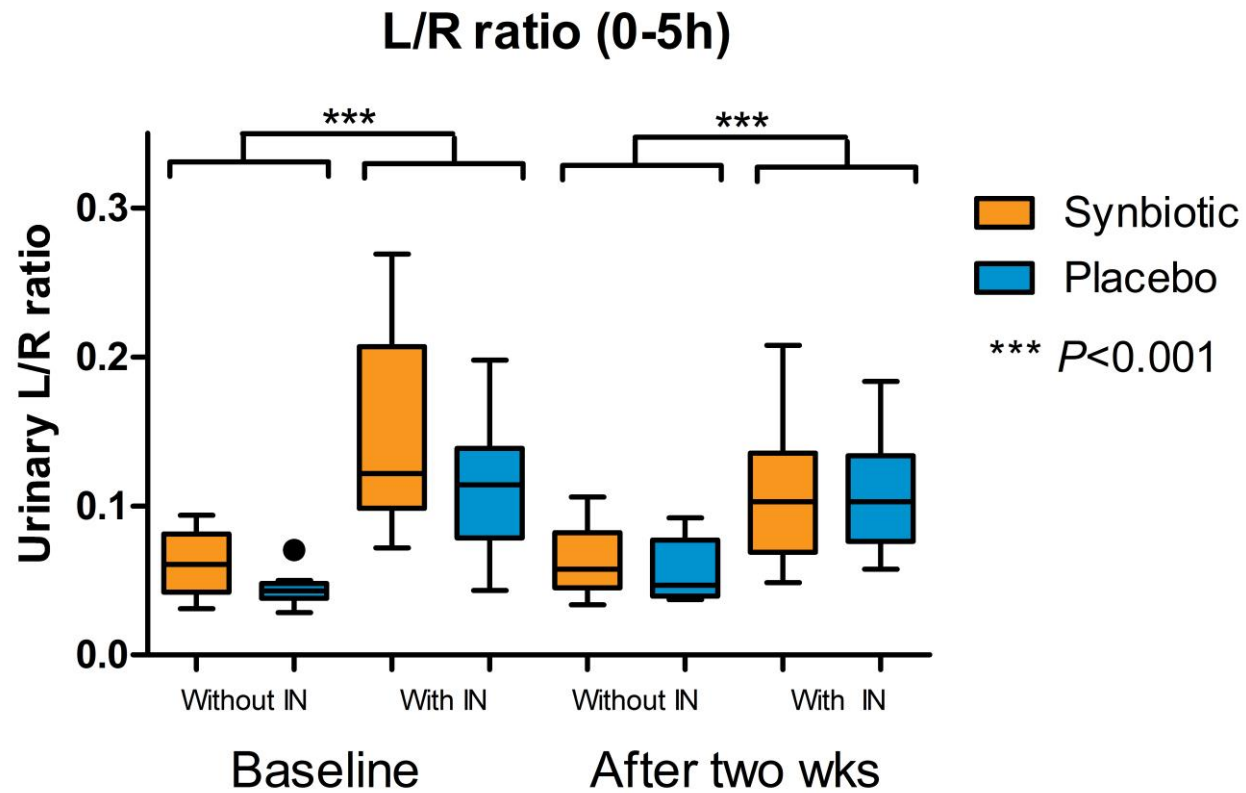




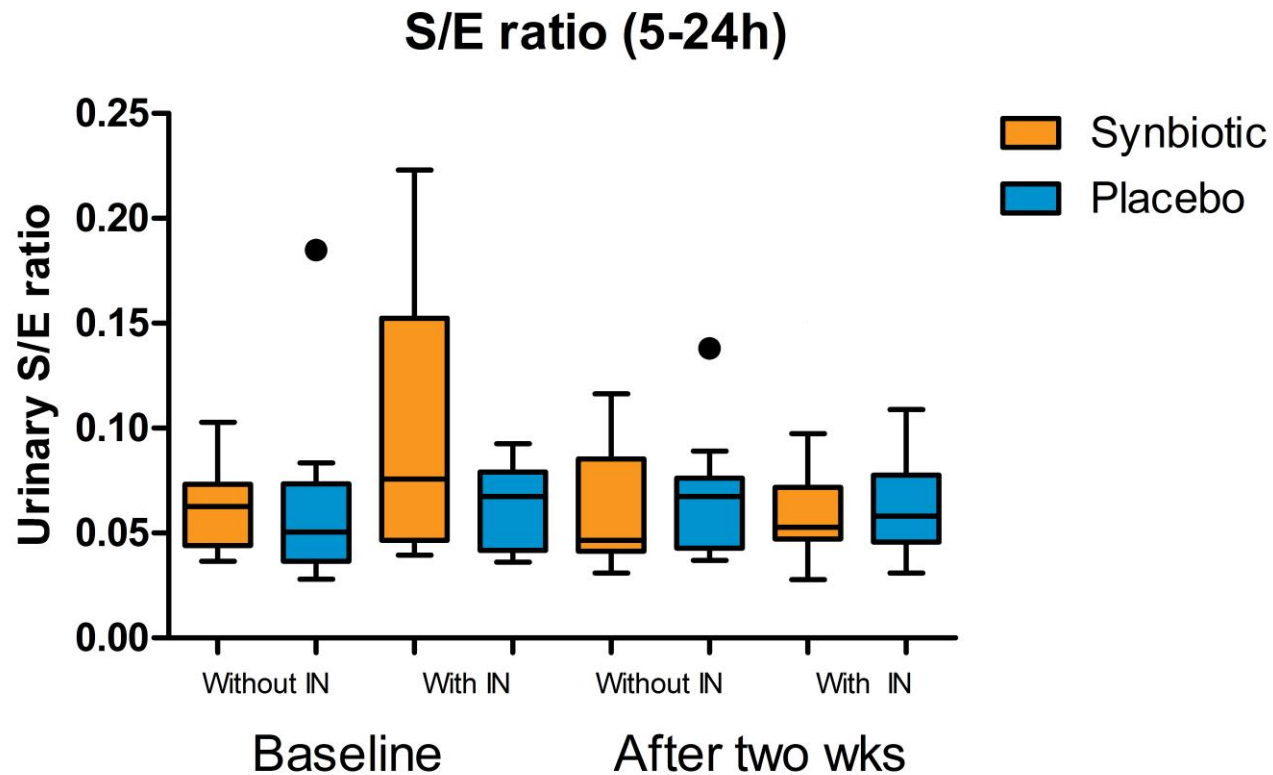
# Results – gastroduodenal permeability



# Results – small intestinal permeability



# Results – colonic permeability



# Conclusion

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- Indomethacin causes reversible damage to the stomach and small intestine
- Two weeks scFOS + Ecologic<sup>®</sup> 825 supplementation does not reinforce gastroduodenal, small intestinal or colonic permeability in a healthy gut, nor in a compromised gut

# Discussion

- Hypothesis not confirmed
  - Mechanism of action synbiotic
- Analyses of zonulin and cytokines are ongoing
- Luminal samples of small intestine
  - Microbiota of duodenum, jejunum and ileum are being analyzed
- Healthy and relatively young study sample
  - Elderly
  - Patient populations

# Thanks to...

## Project team

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