



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

E. Wilms, F.J. Troost, A.A.M. Masclee

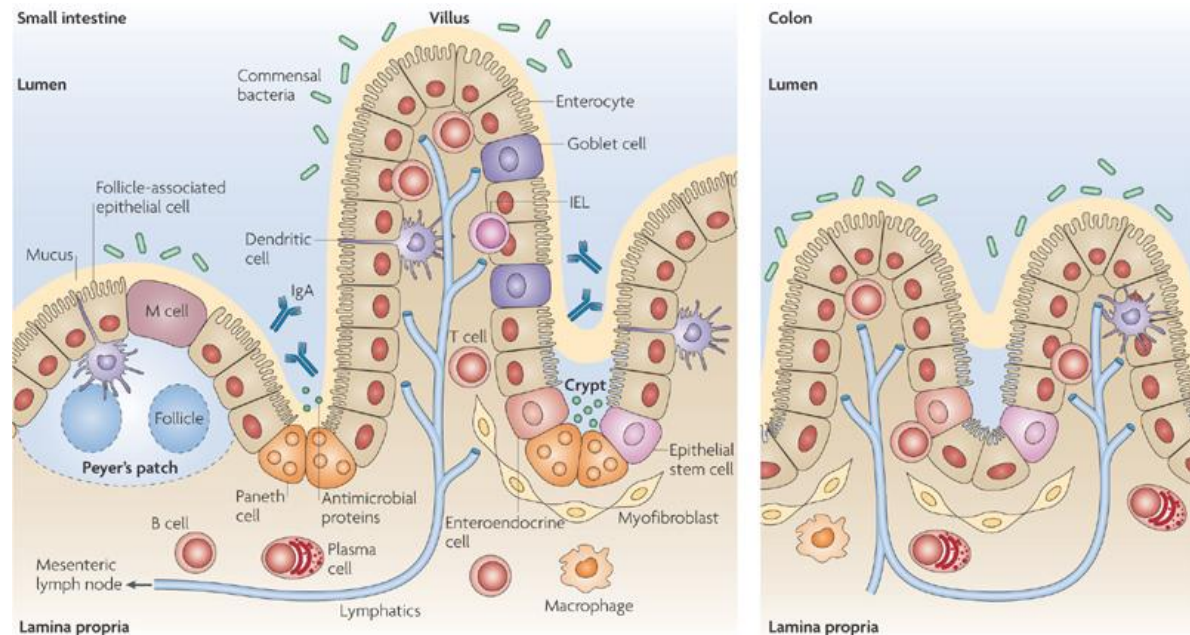
Maastricht UMC+



Department of Internal Medicine,
division of Gastroenterology-Hepatology

Introduction – intestinal barrier

- Epithelial barrier
- Mucus barrier
- Immunological barrier



Introduction – synbiotics

- Synbiotics: combination of probiotics and prebiotics
- Ecologic[®] 825 + short-chain fructooligosaccharide (scFOS)
 - ↑
probiotic mixture
 - ↑
prebiotic
- Ecologic[®] 825 decreased intestinal permeability *ex vivo* in pouchitis patients¹

Objective and hypothesis

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

- Twenty healthy adults
- 18 to 65 years of age
- BMI 20-30 kg/m²
- No gastrointestinal complaints
- No use of medication
- No smoking

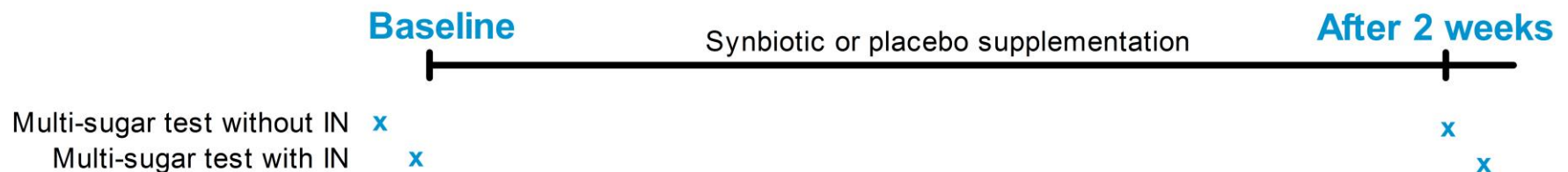
Methods – study design

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

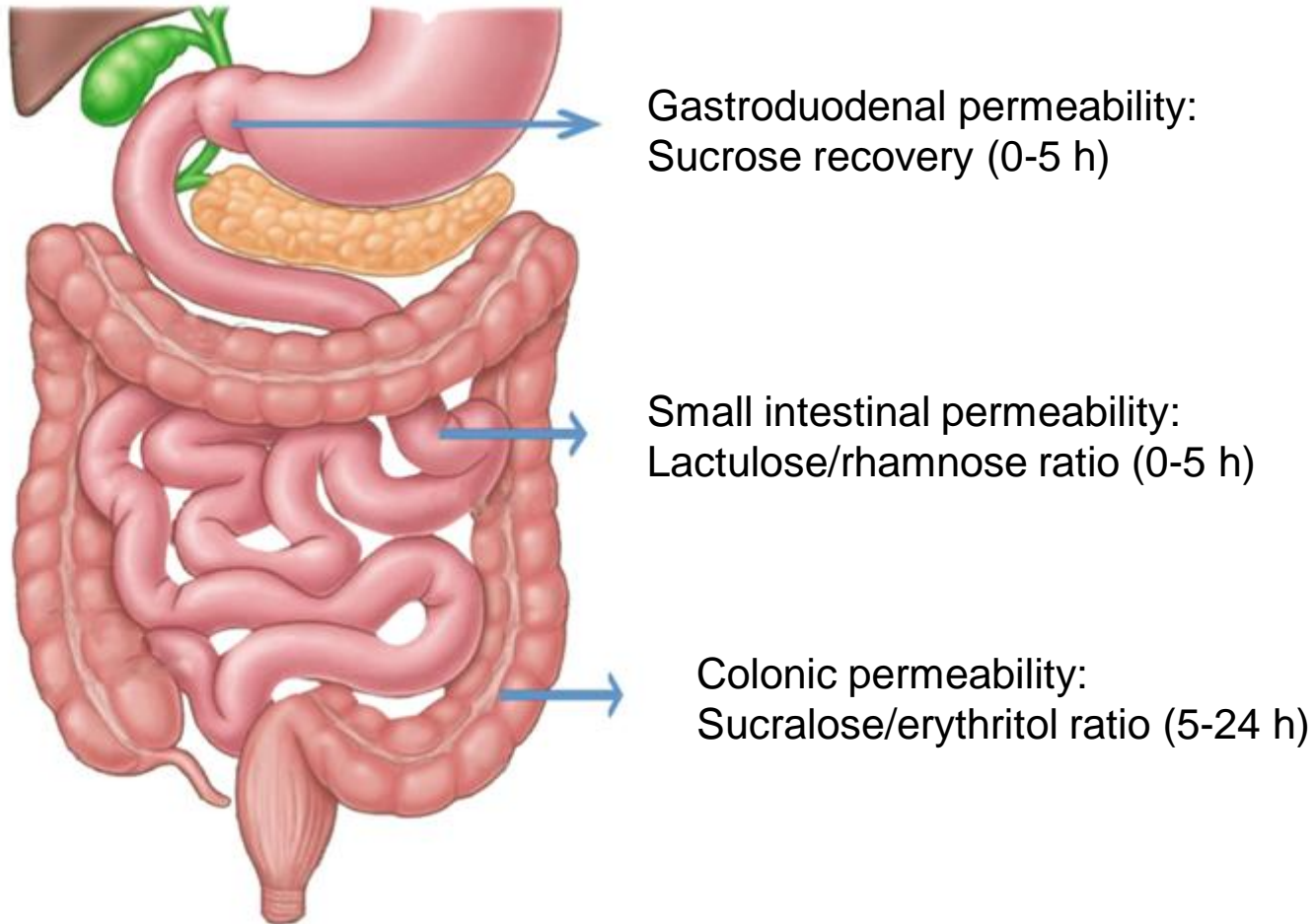
* Containing *Bifidobacterium bifidum* (W23), *B. lactis* (W51), *B. lactis* (W52), *Lactobacillus acidophilus* (W22), *L. casei* (W56), *L. paracasei* (W20), *L. plantarum* (W62), *L. salivarius* (W24) and *Lactococcus lactis* (W19).

Methods – intestinal permeability (1)

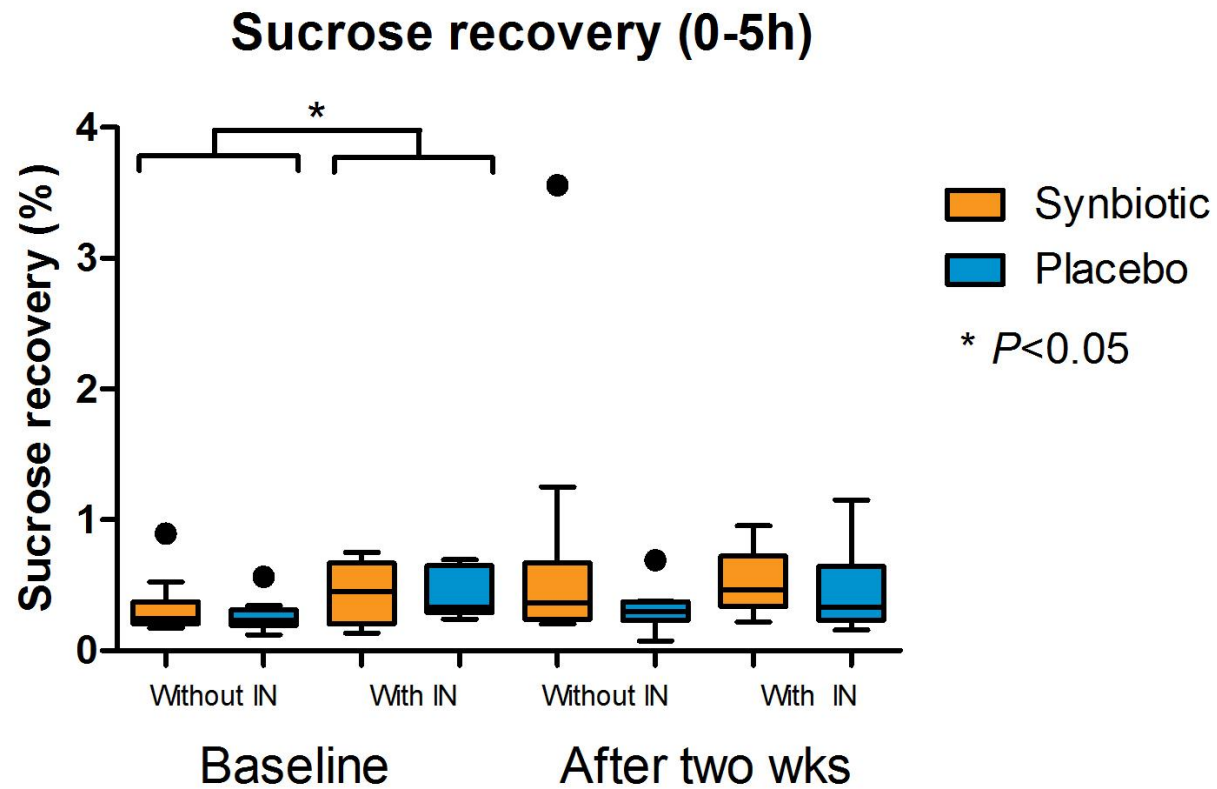
- Assessed non-invasively by multi-sugar test
- In absence and presence of indomethacin
- Indomethacin is known to induce reversible gastrointestinal damage²
- At baseline and after intervention



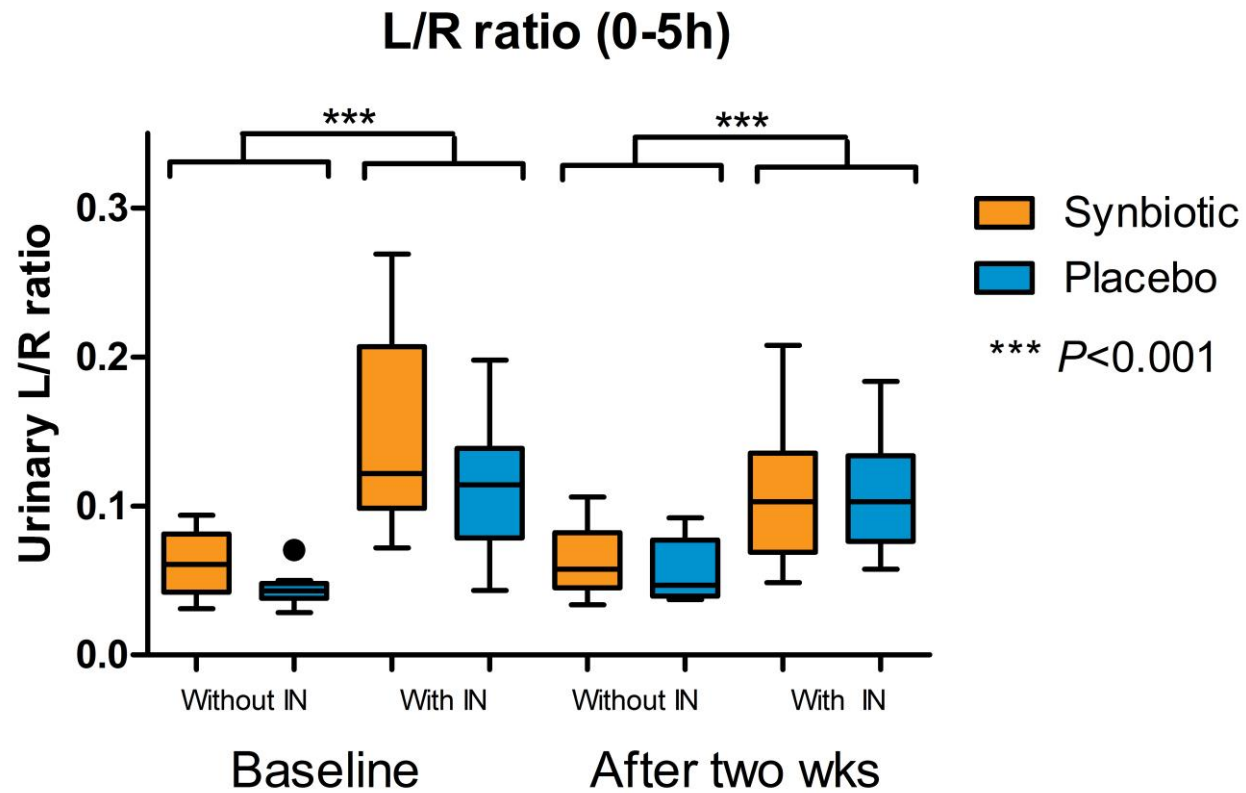
Methods – intestinal permeability (2)



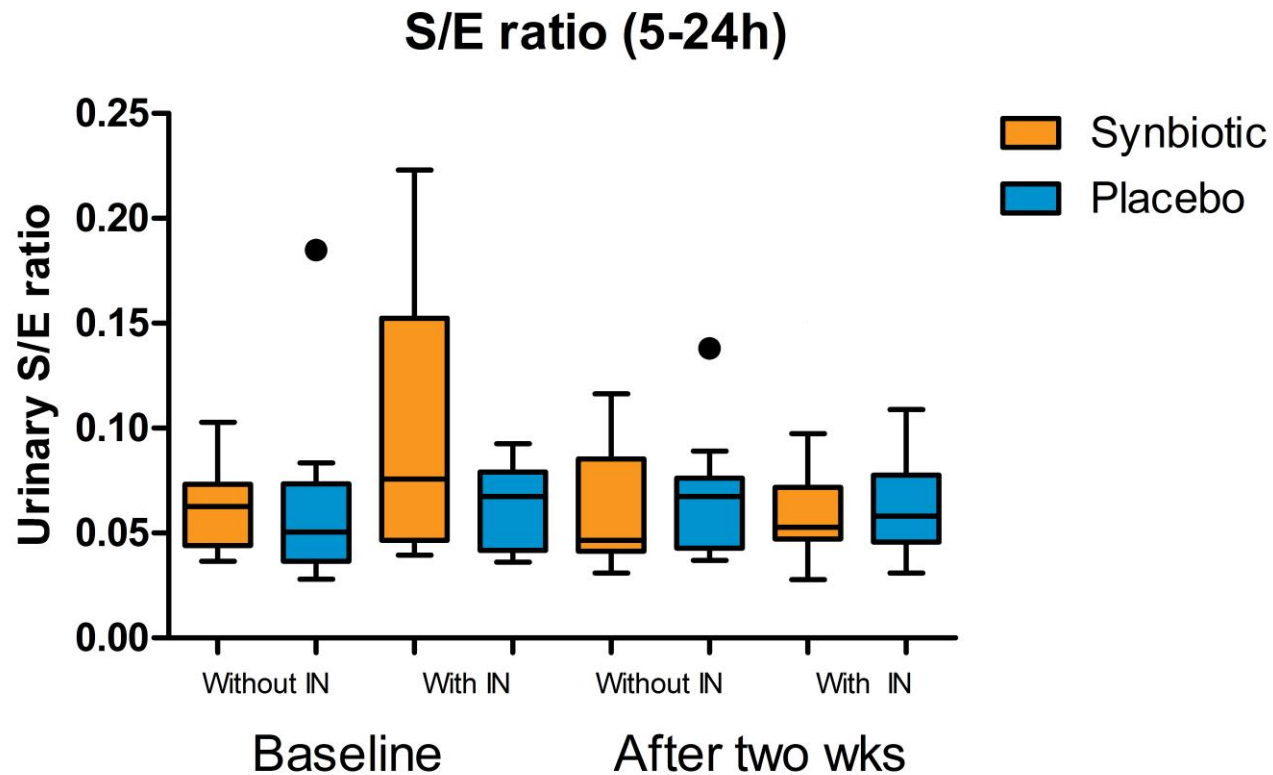
Results – gastroduodenal permeability



Results – small intestinal permeability



Results – colonic permeability



Conclusion

- Indomethacin causes reversible damage to the stomach and small intestine
- Two weeks scFOS + Ecologic[®] 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

Maastricht UMC+

Prof. Dr. Ad Masclee

Dr. Freddy Troost

Winclove Probiotics

Marco van Es

Isolde Besseling-van der Vaart

Wageningen UR

Prof. Dr. Hauke Smidt

Drs. Coline Gerritsen

Antonius Ziekenhuis Nieuwegein

Prof. Dr. Ger Rijkers

This study was subsidized by RVO, FND07013