In vitro short-term colonic screening of compounds for gut microbiome interaction

Commonly used acronym: *Short-term SHIME*

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Organisation

Name of the organisation ProDigest
Department Contract Research
Country Belgium
Geographical Area Flemish Region

Partners and collaborations

ProDigest, ProDigest

SCOPE OF THE METHOD

The Method relates to	Animal health, Human health
The Method is situated in	Basic Research
Type of method	In vitro - Ex vivo

DESCRIPTION

Method keywords

gut microbiota
metabolic profiling
metagenome
screening
gut health
short-term
human

Scientific area keywords

fibre
probiotic
prebiotic
postbiotic
api
stability
drug-bug interaction
host-microbiome interaction
inter-individual variability
IBD

pathogen

Method description

ProDigest's short-term colonic simulation is an *in vitro* model for rapid screening of the interaction between test products and the gut microbiome. The key microbial saccharolytic and proteolytic markers are analysed as well as evolution in the composition of the microbiome and other endpoints as desired by the customer. Ideally suited for cost-efficient investigation of many test products, combinations or formulations, inter-individual variability in effect, ... Model organisms:
- human: adult vs infant, healthy vs diseased
- dog
- cat
- pig
- poultry (caecum)

Method status

History of use
Internally validated
Published in peer reviewed journal

PROS, CONS & FUTURE POTENTIAL

Advantages

Representative of donor microbiome ;
Robust simulation ;
Enough sampling for multiple analyses and kinetic investigations.

Challenges

This set-up considers short-term interactions between one dose of test product and the microbiome.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

Van den Abbeele, P., et al., 2018. A combination of xylooligosaccharides and a polyphenol blend affect microbial composition and activity in the distal colon exerting immunomodulating properties on human cells. Journal of Functional Foods, Vol. 47, pp. 163-171. https://doi.org/10.1016/j.jff.2018.05.053.
Van den Abbeele, P., et al. 2018. Different Oat Ingredients Stimulate Specific Microbial Metabolites in the Gut Microbiome of Three Human Individuals in Vitro. ACS Omega, Vol. 3 (10), pp. 12446-12456. https://doi.org/10.1021/acsomega.8b01360
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