Colon-on-a-plate

Commonly used acronym: *CoaP*

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Organisation

Name of the organisation ProDigest

Department Gastrointestinal Expertise

Country Belgium

Geographical Area Flemish Region

SCOPE OF THE METHOD

The Method relates to	Animal health, Human health
The Method is situated in	Basic Research, Translational - Applied Research
Type of method	In vitro - Ex vivo
Species from which cells/tissues/organs are derived	Fecal material from humans or animals

DESCRIPTION

Method keywords

gut health

gut microbiota

colonic metabolism

metabolomics

metagenomics

Correlation in vitro in vivo

predictivity

humans
companion animals
farm animals
high throughput
screening
interindividual variabiity

Scientific area keywords

fibre
prebiotics
probiotics
postbiotics
symbiotics
LBP
HMO
proteins
carbohydrates
nutraceuticals
plant extracts
polyphenols
api
drugs
digestion
in vitro
ex vivo

Method description

The Colon-on-a-plate® technology is a high-throughput biorelevant *in vitro* simulation of the physiology and microbiology of the colon. This robust screening technology is not limited to comparing the impact of tens of test product on the microbiome, but also offers insight into the factors influencing the response of the microbiome towards these products. These factors include - but are not limited to - inter individual variability, disease status, mucosal compartment, impact of pathogens, use of antibiotics and differences in gastrointestinal physiology,

potentially leading to hundreds of tests in parallel. The implementation of a robust statistical approach provides a detailed insight on the interplay between test products and the gut microbiota, reducing consumables and budget requirements. Colon-on-a-plate® has been optimized to perform a short-term simulation, up to 48 hours. Despite the small volumes of the simulation, multiple readouts will provide insights in relative and absolute changes in microbial community composition, microbial fermentation activity and impact on the microbiome-host interactions using a variety of human cell assays.

Method status

History of use
Internally validated
Published in peer reviewed journal

PROS, CONS & FUTURE POTENTIAL

Advantages

- Validated with *in vivo* data (IVIVC)
- *In vivo* predictivity in 48 hours
- High throughput (100s of conditions in parallel)
- Low complexity
- Cost efficient
- Takes into account interindividual variability

Modifications

The Colon-on-a-plate can
- incorporate the simulation of the mucosa-associated microbial community,
- be coupled with off-line cell assays to evaluate host-microbiome interactions,
- represent the microbiome of animals and humans, healthy or diseased and of all ages.

An adaptation of the Colon-on-a-plate is ProDigest's Short-term colon, which follows the same principles, but enables kinetic insights.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

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