

BioGaia and University of Gothenburg reach an important milestone towards next-generation probiotics

In a paper published in the journal Nature, a team of researchers from the University of Gothenburg and MetaboGen, a fully owned subsidiary of BioGaia, report a novel method to overcome oxygen sensitivity to beneficial resident bacteria in the human gut, which are significantly reduced in metabolic conditions and cardiovascular disease.

The gut microbiota, the trillions of microbes (bacteria, viruses, fungi, parasites, etc.) living in our intestines, is important to digest our food, eliminate toxins, activate, and educate the immune system. In recent years, the scientific community has identified specific resident bacteria associated with improved human health, for example by producing butyrate and which are significantly reduced in metabolic diseases. Such bacteria from the microbiota have been suggested to become "next-generation probiotics". *Faecalibacterium prausnitzii*, a bacterium with anti-inflammatory properties, is one of them.

Strategies have been developed to design next-generation probiotics containing products which can replace missing bacteria in individuals with increased risk of developing diseases. However, most of these bacteria are nutritionally demanding and extremely sensitive to oxygen, dying just seconds after being exposed to oxygen in the ambient air thus making development of live bacterial products extremely difficult.

A safe and innovative product

In the published study, *Faecalibacterium prausnitzii* was co-isolated from healthy donors with another bacterium, *Desulfovibrio piger*, which has beneficial effects on *Faecalibacterium prausnitzii* in a completely novel cooperative mode.

Subsequently the researchers have "trained" the oxygen sensitive bacteria to isolate more aerotolerant *Faecalibacterium prausnitzii*, establishing a new patented method to overcome oxygen sensitivity and obtain new patented strains.

"When these bacteria were grown together, both the biomass - in other words, the number of bacteria - and the production of butyrate - which has an anti-inflammatory effect - increased," says Muhammad Tanweer Khan, first author of the study. "This will enable us to increase the production yield, and to potentially increase butyrate production in the future."

Moreover, the study, which is described in the article, shows that the "trained" probiotic combination is safe for human consumption. BioGaia is already working

together with Professor Fredrik Bäckhed, the University of Gothenburg team's leader of the study, on the next steps: investigate if an intervention with the new product improves blood sugar control in individuals with prediabetes.

"We have high hopes," says Professor Bäckhed. "Further studies will show if we are correct in our hypothesis that gut bacteria have the potential to improve our health also within the area of metabolic diseases."

"I am extremely excited about this new milestone in the next-generation probiotics field, which confirms a long-lasting and fruitful scientific collaboration between BioGaia and Professor Bäckhed's lab", adds Gianfranco Grompone, CSO of BioGaia.

Study Title: Synergy and oxygen adaptation for development of next-generation probiotics.

The study was published online on August 2, 2023, in Nature. Link [here](#).

Follow us:

Subscribe to BioGaia press releases [here](#)

LinkedIn [here](#)

Contacts:

Name: Gianfranco Grompone, Vice-President of Discovery and Research at BioGaia

Email: gg@biogaia.se

Phone: +46 700 01 93 94

Media requests:

Name: Mikaela Idermark Stern, Corporate Communications at BioGaia

Email: mis@biogaia.se

Phone: +46 0730 95 61 50

About BioGaia

BioGaia is an innovative Swedish healthcare company that develops, markets, and sells probiotic products with documented health benefits. The products are sold through local distribution partners or via own distribution in over 100 markets. The class B share of the Parent Company BioGaia AB is quoted on the Mid Cap segment of Nasdaq Stockholm.

biogaia.com