CO-MBACT-AGE

Carbon monoxide-releasing molecules (CO-RMS) as a new treatment to ameliorate age-related metabolic dysfunction.

ERGANEO
L'AVENIR EST FAIT D'AUDACE

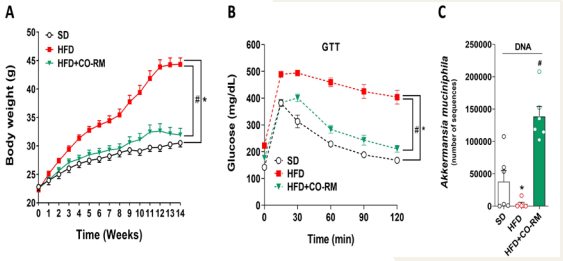
PRESENTATION

Corroborating evidence supports that intestinal dysbiosis is key to the development of a variety of metabolic, inflammatory, and autoimmune disorders, such as obesity, type 1 and type 2 diabetes, rheumatoid arthritis, inflammatory bowel disease and cancer. Dysbiosis is characterized by an imbalance in bacterial composition, changes in bacterial metabolic activities and/or changes in bacterial distribution within the gut. Our technology consists of using a therapeutically active compound (CO-RM) that interacts with the gut microbiota by delivering controlled amount of carbon monoxide (CO) in vivo, as this endogenous gas is known to exert anti-inflammatory actions and modulate energetic metabolism. We report that gut dysbiosis induced by obesity in mice fed a high fat diet is prevented by oral administration of CO-RM leading to a reduced body weight gain, improved glucose metabolism and increased insulin resistance. The impaired gut dysbiosis in obese mice is exemplified by a marked decrease in the abundance of beneficial bacteria, such as Akkermansia muciniphila, and the ability of CO-RM to restore the impaired microbiota composition (see Figure). Our data provide strong evidence on the efficacy of CO-RM in the treatment of obesity by reprogramming the gut microbiota to a healthy phenotype, indicating that CO might be equally effective against other dysbiosis-associated diseases.

APPLICATIONS

- Treatment or prevention of gut dysbiosis
- Treatment or prevention of gut dysbiosis-associated diseases, including metabolic dysfunction, diabetes, obesity, cancer
- CO-RM to be used as a prebiotic alone or in combination with other prebiotics/probiotics

Carbon monoxide - CO-releasing molecule (CO-RM)
Gut microbiota - Dysbiosis - Obesity - Metabolism



Oral administration of CO-RM markedly reduces body weight gain in obese mice fed a high fat diet (HFD) (A) while improving glucose metabolism as shown by the glucose tolerance test (B).
Treatment with CO-RM prevented dysbiosis in obese mice by restoring the levels of Akkermansia muciniphila in the gut microbiota (C).

INTELLECTUAL PROPERTY

Patent Application 05/2022 (priority) EP22305704.3, international filing (05.2023) PCT/EP2023/062644

COMPETITIVE ADVANTAGES

- Orally active CO-releasing molecule
- Delivery of CO with high efficiency to the gastrointestinal tract and faeces

CONTACT

+33 (0)1 44 23 21 50
industriels@erganeo.com
Ref. project : 687

DEVELOPMENT PHASE

- ☑ Ongoing in vivo efficacy in mice disease models