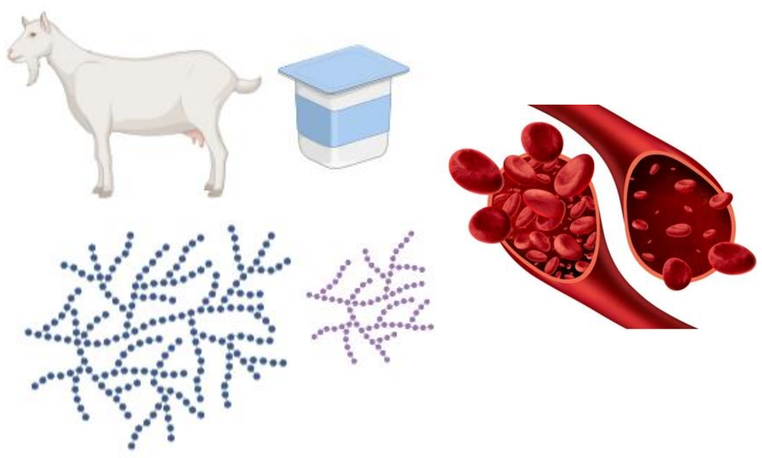
Fermented goat's milk contributes to the recovery of iron deficiency anaemia via modulation of the gut microbiome

Ana Soriano-Lerma[a,b,c], María García-Burgos[a], María José Muñoz-Alférez[a], Virginia Pérez-Carrasco[b,c,d], Miguel Soriano[e], José Antonio García-Salcedo[b,c,d] , Inmaculada López-Aliaga[a]

[a]Department of Physiology (Faculty of Pharmacy, Campus Universitario de Cartuja), Institute of Nutrition and Food Technology "José Mataix Verdú", University of Granada, E-18071 Granada, Spain. [b]GENYO. Centre for Genomics and Oncological Research: Pfizer / University of Granada / Andalusian Regional Government, PTS Granada, E-18016, Granada, Spain. [c]Instituto de Investigación Biosanitaria ibs.GRANADA, E-18012, Granada, Spain. [d]Microbiology Unit, University Hospital Virgen de las Nieves, E-18014, Granada, Spain. [e]Center for Intensive Mediterranean Agrosystems and Agri-food Biotechnology (CIAIMBITAL), University of Almeria, E-04120, Almería, Spain.

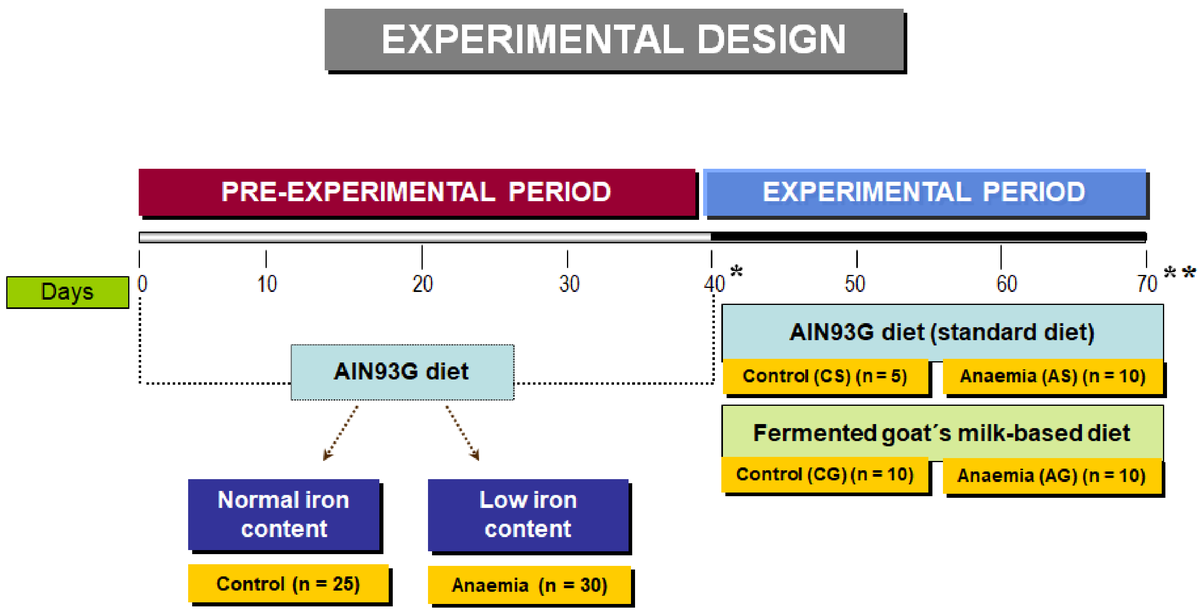
Anaemia is estimated to affect one third of the global population, with iron deficiency being the top leading cause. Iron deficiency anaemia (IDA) triggers intestinal dysbiosis, especially in the colon and impairs the intestinal barrier (Soriano-Lerma et al., 2024). Gut protective approaches seem imperative during the clinical management of IDA.



Objectives

This study aims to analyse the beneficial effects of fermented goat's milk (FGM)-based diet on the gut microbiome and the intestinal barrier in an animal model of IDA characterized by intestinal dysbiosis and microbial translocation.

Material and methods



Intestinal content samples: 16S rRNA sequencing
Serum samples: LPS analysis

Linear discriminant analysis Effect Size (LEfSe) on colonic content samples identified fewer microbial taxa with statistical differences between anaemic and control animals fed with FGM-based diet compared to standard diet (**Figure 2**)

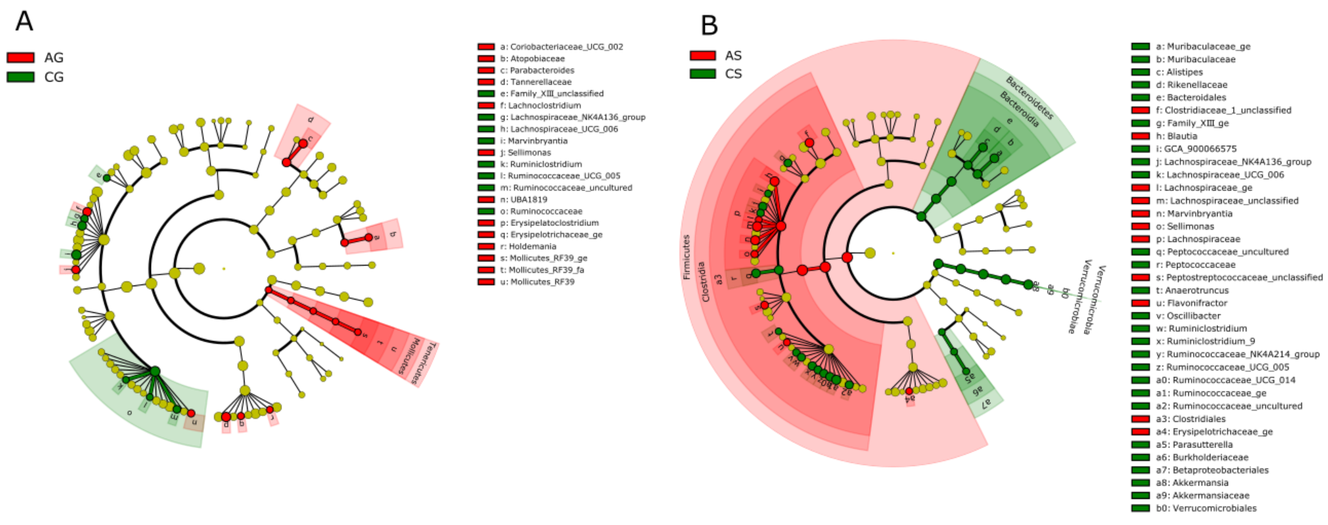


Figure 2. Cladogram for differentially distributed taxa ($p<0.05$, LDA>2) between control and anaemic groups fed with FGM-based diet (A) or standard diet (B) in colonic content samples

Results

Principal Coordinate Analysis (PCoA) on colonic content samples revealed that the use of fermented goat´s milk (FGM) recovered colonic dysbiosis to a greater extent compared to standard diet (**Figure 1**)

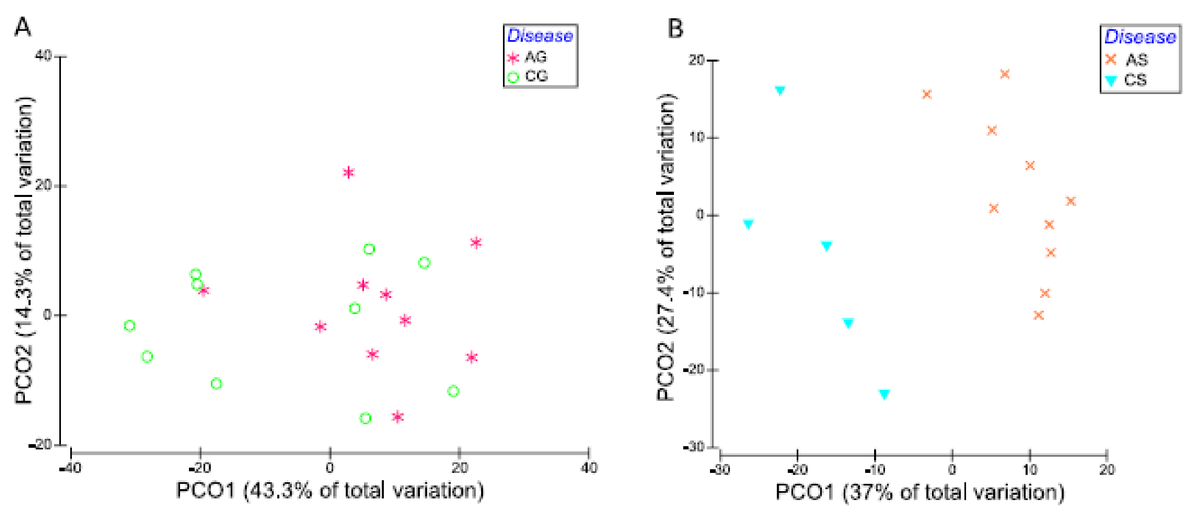


Figure 1. PCoA based on Bray-Curtis distances. (A) Colonic content samples from control and anaemic animals fed with FGM-based diet (B) Colonic content samples from control and anaemic animals fed with standard diet.

Microbial translocation was normalized after treatment with the standard diet and the FGM-based diet (**Figure 3**).

This result suggests both diets similarly restore the impairment in the intestinal barrier during the recovery of IDA.

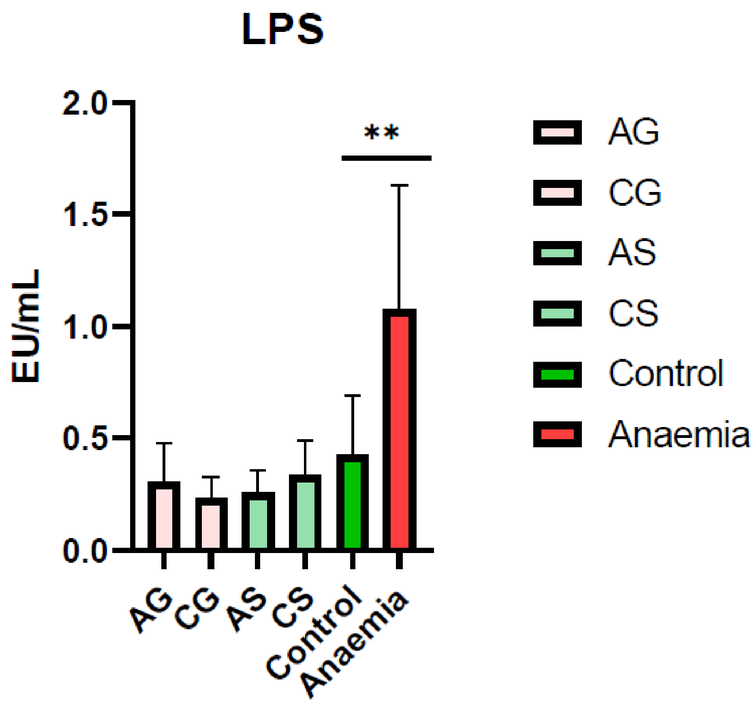


Figure 3. LPS levels in each experimental group..

Bibliography

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