SUPPLEMENTARY INFORMATION

SUPPLEMENTARY TABLES

Table S1. Estimated duodenal BCM-7 concentrations in three European population groups (children, adolescents, and adults) based on three levels of milk and dairy consumption (low, medium, and high exposure).

	Low exposure (µg/day) 5th percentile	High exposure (µg/day) 95th percentile	Average duodenal volume (mL)	Duodenal [BCM-7] (M) for low exposure	Duodenal [BCM-7] (M) for high exposure
Children	200	2,357	30 [1]	8×10^{-6}	99×10^{-6}
Adolescents	163	2,594	42 †	5×10^{-6}	78×10^{-6}
Adults	132	2,541	54 [2]	3×10^{-6}	60×10^{-6}

Exposure data were extrapolated from our previous study [3]. Duodenal molar concentrations were calculated by converting daily exposure (µg/day) to moles using BCM-7's molecular weight (790.9 g/mol) and dividing by the respective duodenal volume (L) for each population group. For simplicity and consistency, 4 µM was chosen to represent the low exposure level for all three population groups. The high exposure level was represented by 80 µM for adolescents and adults, and 120 µM for children. An intermediate exposure level of 40 µM was selected to provide a homogeneous and representative range for the study. The estimated duodenal BCM-7 concentrations were used to guide the selection of treatment doses in the *in vitro* experiments, ensuring that the concentrations tested were physiologically relevant and representative of the varying exposure levels across different European population groups. † Calculated mean between children and adults.

Table S2. TaqMan probe assays used for quantitative PCR analysis of target genes in HT29-MTX-E12 cells (Applied Biosystems; Foster City, CA, USA).

Gene symbol	Gene name	TaqMan probe assay ID
Target genes		
DPP4	dipeptidyl peptidase-4	Hs00897386_m1
IL-8	interleukin 8	Hs00174103_m1
MUC2	mucin 2	Hs03005103_g1
MUC5AC	mucin 5AC	Hs01365616_m1
Reference genes		
ACTB	actin beta	Hs01060665_g1
GAPDH	glyceraldehyde-3-phosphate dehydrogenase	Hs99999905_m1
PPIA	peptidylprolyl isomerase A	Hs99999904_m1

Table S3. The limit of detection (LOD) of each analyte for the Bio-Plex Pro Human Cytokine 8-plex Assay (M50000007A, batch 64494196) (Bio-Rad Laboratories, Inc., Hercules, CA, USA).

Analyte	LOD
IFN-γ	1 pg/mL
GM-CSF	0 pg/mL
IL-2	0 pg/mL
IL-4	0 pg/mL
IL-6	0 pg/mL
IL-8	0 pg/mL
IL-10	0 pg/mL
TNF-α	0 pg/mL

IFN-γ: interferon γ; GM-CSF: granulocyte-macrophage colony-stimulating factor; IL: interleukin; TNF-α: tumor necrosis factor α.

SUPPLEMENTARY FIGURE

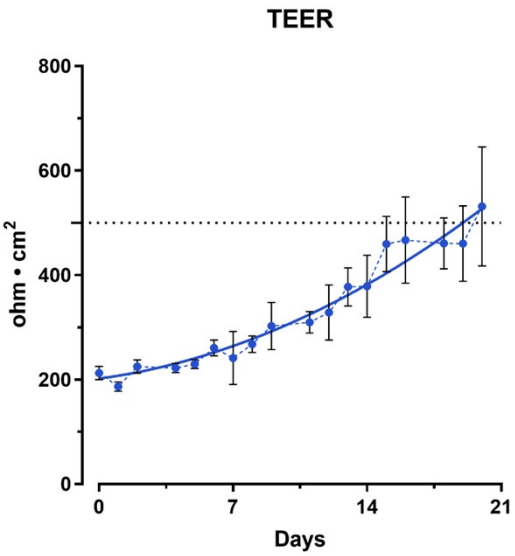

Figure S1. Trans-epithelial electrical resistance (TEER) values of HT29-MTX-E12 cells cultured for 21 days on an orbital shaker. Data are presented as mean ± standard deviation (SD) of three independent experiments. The dashed line indicates the minimum TEER threshold (500 Ω·cm^2) required for monolayers to be considered suitable for experimental use.

REFERENCES

[1] E. Papadatou-Soulou, J. Mason, C. Parsons, A. Oates, M. Thyagarajan, H. K. Batchelor, *Mol. Pharm.* **2019**, *16*, 3896.

[2] C. Schiller, C. P. Fröhlich, T. Giessmann, W. Siegmund, H. Monnikes, N. Hosten, W. Weitschies, *Aliment. Pharmacol. Ther.* **2005**, *22*, 971.

[3] F. Danesi, F. Rossi, G. Leni, G. Antonelli, A. Bordoni, T. Bertuzzi, M. Santoni, D. Risso, F. Canzoneri, R. Menta, M. Dall'Asta, *Int. J. Food Sci. Nutr.* **2025**, *76*, 571.