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MDPI

A 4-week Mediterranean type diet intervention ameliorated the immunological profile of individuals at risk of food insecurity

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INTRODUCTION & AIM

Food insecurity is a risk factor for **obesity**, which has been associated with alterations of **microbiota composition and a pro-inflammatory status.**

The main objective is to:

Determine the impact of a food and nutrition education dietary intervention on the inflammatory profile of subjects at risk of food insecurity and elucidate the modulations of the gut microbiota.

METHOD

Food and nutrition education intervention

n = 17

Recipients of food assistance

- 1h training session on Mediterranean Diet guidelines
- Financial support for food shopping
- Educational materials (a monthly meal plan, recipes, shopping list)

Basal (T0) — (4 weeks) — End (T1)

Diet

24h diet record (3 days)
CESNID and USDA food composition tables

Immunological parameters

LEGENDplex Human Essential Immune Response Panel

Faecal microbiota composition and SCFA quantification

Illumina 16S rRNA
Gas chromatography

RESULTS & DISCUSSION

Table 1. Dietary intake and main dietary sources at baseline and after the intervention.

		Median (P_{25} –P_{75})	Dietary sources (%)
Vitamin D (µg/d)	T0	1.58 (1.08 - 2.29)	Chicken, egg (58); tuna (14); margarine (5); others (19).
	T1	2.88 (2.47 - 4.23)*	Tuna (38); chicken, egg (28); salmon (12); others (22).
Trans fatty acid (mg/d)	T0	114.66 (28.63 - 123.46)	Chicken, tight (68); chicken, breast (10); sausage (5); others (17).
	T1	32.53 (12.25 - 84.95)*	Chicken, tight (40); chicken, breast (32); sausage (10); others (18).

(*) (T0 *vs.* T1; *p* value < 0.05, Wilcoxon test)

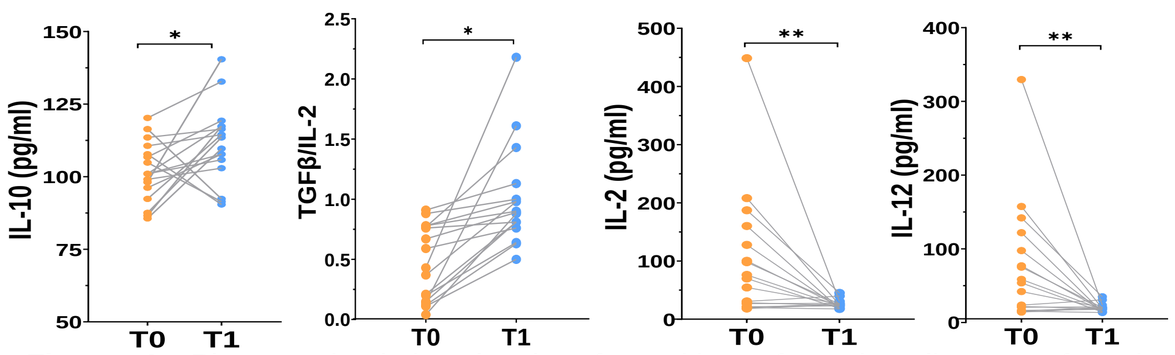

Figure 1. Plasma circulating levels of cytokines from baseline to after the intervention for each individual. (*p* value < 0.05 (*), 0.01 (**), Wilcoxon test).

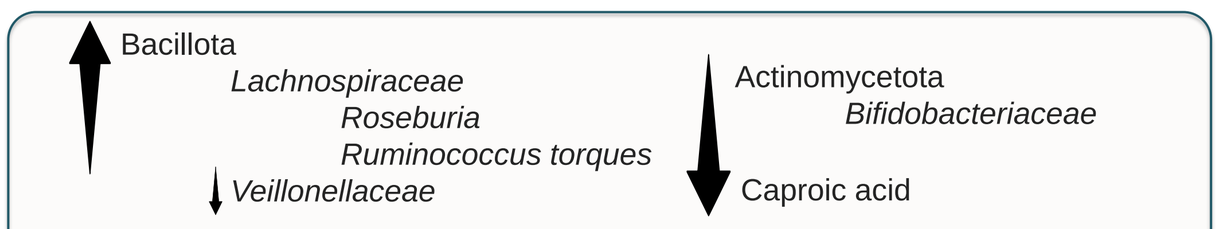

Figure 2. Variations in faecal relative microbiota composition and SCFA from baseline to after the intervention. Only significant results are shown (Wilcoxon test).

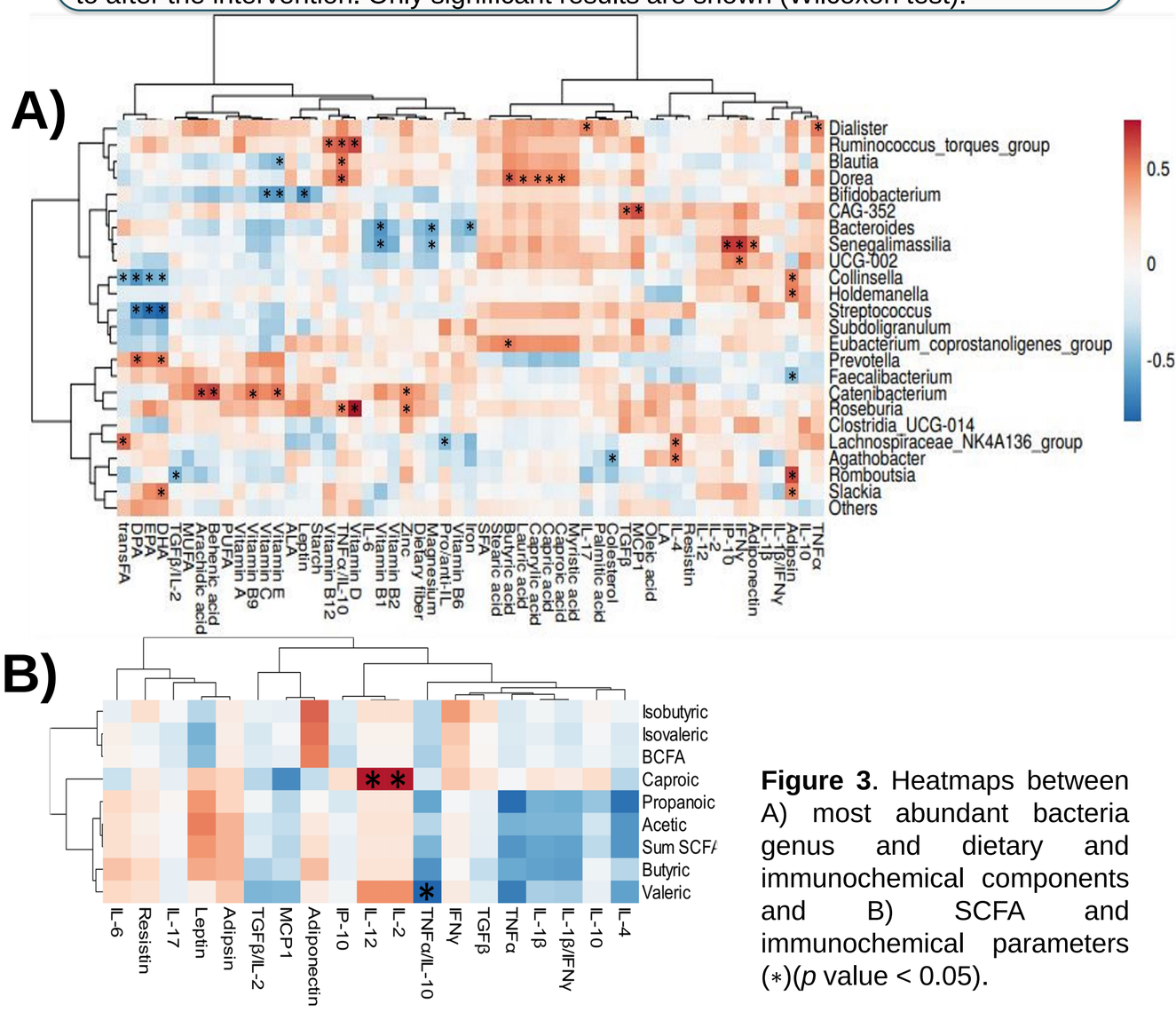

Figure 3. Heatmaps between A) most abundant bacteria genus and dietary and immunochemical components and B) SCFA and immunochemical parameters (∗)(*p* value < 0.05).

CONCLUSION

A one-month MD intervention in individuals at risk of food insecurity increased vitamin D intake and ameliorated the pro-inflammatory status in parallel with modulations of the gut microbiota.

REFERENCES

Zapico, A., Arboleya, S., Salazar, N., Perillán, C., Ruiz-Saavedra, S., de los Reyes-Gavilán, C. G., Gueimonde, M., & González, S. (2023). Impact on Fecal Microbiota and Health-Related Markers of an Intervention Focused on Improving Eating Behavior in People at Risk of Food Insecurity. Nutrients, 15(16). https://doi.org/10.3390/nu15163537