

# Module 13: Diet & the Microbiome

Fiber, fermented foods, and why diet trumps supplements.

Tracks: Core, Clinical, Advanced | Duration: 50 min

## KEY TAKEAWAYS

- Diet is the single most modifiable factor shaping the gut microbiome.
- Fermented foods increase microbial diversity more than fiber alone in the short term (Sonnenburg/Stanford study).
- Ultra-processed foods, emulsifiers, and artificial sweeteners can disrupt the microbiome — but mechanistic human data is still limited.
- Personalized nutrition based on microbiome profiling is promising but not yet clinically actionable.

## EVIDENCE-GRADED CLAIMS

Dietary fiber increases SCFA production and supports gut health	<b>A — Clinically established</b>	Well-established; feeding studies confirm dose-response.
Fermented foods increase microbial diversity	<b>B — Supported, context-specific</b>	Stanford RCT (Wastyk 2021) showed increased diversity; longer-term effects unknown.
Artificial sweeteners disrupt the gut microbiome	<b>C — Promising, preliminary</b>	Suez 2014 showed effects in mice and some humans; replication and clinical significance debated.
Personalized nutrition based on microbiome testing works	<b>D — Plausible, unproven</b>	PREDICT studies show individual variation; no validated clinical implementation yet.

## CLINICAL CASE

### The keto vs Mediterranean debate

A 45-year-old with prediabetes and obesity asks whether a ketogenic diet or Mediterranean diet is better 'for the microbiome.' She's seen conflicting information from wellness influencers and wants to know what the science says.

*How would you compare ketogenic and Mediterranean diet effects on the microbiome, address the fiber deficit concern with keto, and make a practical recommendation?*

## SUMMARIES

### For Patients

What you eat is the single most important factor shaping your gut microbiome. A diet rich in fiber and fermented foods promotes microbial diversity and produces beneficial metabolites. Ultra-processed foods may do the opposite. But personalized 'eat for your microbiome' services aren't yet supported by enough science to make specific recommendations.

### For Clinicians

The Stanford fermented food study (Wastyk 2021) showed that 10 weeks of high-fermented-food intake increased microbial diversity and decreased inflammatory markers (IL-6, IL-10, IL-12b) — while high-fiber intake increased SCFA production without changing diversity in the short term. Mediterranean diet patterns consistently associate with higher *Prevotella*, *Faecalibacterium*, and SCFA levels. The PREDICT studies (Berry 2020) demonstrate that postprandial metabolic responses are highly individual and partially microbiome-driven — supporting personalized nutrition in principle but not yet in practice.

## REFERENCES

- Gut-microbiota-targeted diets modulate human immune status — Wastyk HC et al., Cell 2021 [\[Link\]](#)