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ABSTRACT

Rethinking nutrition through the lens of the gut microbiome

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Chronic non-communicable diseases (NCDs) have reached epidemic proportions in industrialized societies, a trend clearly linked to Western-style dietary patterns and changes in the gut microbiome. Research in several animal models suggests that these industrialization-driven shifts in diet–microbiome interactions may actually cause the development of such pathologies.

In this presentation, I will examine what constitutes healthy eating from a microbiome science perspective, focusing on mechanistic evidence that establishes host–microbe interactions as key mediators of diet's physiological effects. I will use this knowledge to address ongoing controversies in the nutrition field and to support the development of innovative dietary strategies.

I will also present findings from a recently published human trial that tested a microbiome restoration approach mimicking key characteristics of non-industrialized dietary patterns (the NiMe™ diet). This diet improved several microbiome features disrupted by industrialization and favourably shifted microbiota-derived plasma metabolites implicated in the etiology of chronic NCDs. It also led to significant cardiometabolic benefits, many of which could be accurately predicted by baseline and diet-responsive microbiome features.

Overall, the evidence supports a central role for the gut microbiome in mediating the physiological effects of diet, offering an exciting opportunity to systematically incorporate microbiome science into nutrition research to improve dietary strategies and recommendations.