Personalised nutrition: ready for practice?

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BACKGROUND: The efficacy by which dietary interventions influence risk markers of multifactorial diseases is mainly determined by taking population-based approaches. However, there exists considerable inter-individual variation in response to dietary interventions, and some interventions may benefit certain individuals or population subgroups more than others.

FINDINGS: This review evaluates the application of nutrigenomic technologies to further the concept of personalised nutrition, as well as the process to take personalised nutrition to the marketplace. The modulation of an individual's response is influenced by both genetic and environmental factors. Many nutrigenetics studies have attempted to explain variability in responses based on a single or a few genotypes so that a genotype may be used to define personalised dietary advice. It has, however, proven very challenging to define an individual's responsiveness to complex diets based on common genetic variations. In addition, there is a limited understanding of what constitutes an optimal response because we lack key health biomarkers and signatures.

CONCLUSION: In conclusion, advances in nutrigenomics will undoubtedly further the understanding of the complex interplay between genotype, phenotype and environment, which are required to enhance the development of personalised nutrition in the future. At the same time, however, issues relating to consumer acceptance, privacy protection as well as marketing and distribution of personalised products need to be addressed before personalised nutrition can become commercially viable.

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