



How to protect both health and food system sustainability? A holistic 'global health'-based approach via the 3V rule proposal

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Abstract

Objective: To define a generic diet to protect human health and food system sustainability based on three dimensions: animal:plant ratio, degree of food processing and food diversity.

Design/setting: The percentages of maximum animal and ultra-processed energy content were evaluated from scientific papers (Web of Science database) and reports from international scientific institutions. Then, a weekly French standard diet, including these percentages and food diversity (≥ 42 different foods), was designed to calculate adequacy to nutritional needs.

Results: Based on traditional and scientifically based healthy diets, and on foresight scenarios for sustainable diets at horizon 2050, a median daily animal energy content intake of 15% was found to be protective towards both human health and environment. Based on epidemiological studies associating ultra-processed energy consumption with increased overweight/obesity risk, a precautionary threshold of approximately 15% ultra-processed energy content was observed. The French diet allows addressing all nutritional needs and other nutritional indicators such as maximum salt and simple sugar consumption, α -linolenic acid:linoleic acid ratio and essential amino acids. This diet was named the '3V rule' for Végétal (plant), Vrai (real) and Varié (varied, if possible organic, local and seasonal). This generic diet can be adapted according to regional traditions and environmental characteristics. Excluding only one dimension of it would threaten both health and food system sustainability.

Conclusions: Tending towards a 3V-based diet, while respecting local constraints, should allow preserving human health, environment (greenhouse gas emissions, pollution, deforestation, etc.), small farmers, animal welfare and biodiversity, culinary traditions and socioeconomics (including an alleviation of public health cost).

Keywords
3V rule
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Today, recommended diets should not consider only consumers' health but also food system sustainability⁽¹⁾. At first view, defining such a diet, covering all four securities at once (sanitary, health, nutritional and environmental), appears to be a tremendous task^(2–4). In all cases, nutritional sciences should be included in a transdisciplinary approach to include all the four criteria. Therefore, adopting a more holistic perspective should be preferred over the present single-nutrient/food group reductionist approach⁽⁵⁾ for which contradictory results have been obtained at present. Indeed, some studies showed that high nutritional quality, healthy diets and/or diets adhering to food-based dietary guidelines are not necessarily associated with lower

greenhouse gas emissions (GHGE)^(6–10), while other studies are more moderate^(11–16). Moreover, GHGE is not the only issue to consider to define sustainable diet; there are also land use, water footprint, biodiversity, socioeconomic aspects and animal well-being. FAO of the United Nations defines sustainable diets as those that protect human health, the environment (pollution, deforestation, GHGE, etc.), small farmers, culinary traditions and socioeconomics (healthy foods accessible to everyone, social life, fair trade, etc.)^(17,18), to which animal biodiversity and welfare⁽¹⁹⁾ can also be added. In addition, it is worth mentioning that the diets of each world region depend on different economic, pedo-climatic and agronomic conditions. Therefore, the design of a sustainable

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