Avens Publishing Group
J Integrative Med Ther
December 2014 Vol.:1, Issue:1

Open Access Review Article

Journal of Integrative Medicine & Therapy

Food Circles: Envisioning How Eating a Variety of Foods Over Time will Benefit Health

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Submission: 12 December 2014
Accepted: 24 December 2014
Published: 29 December 2014

Reviewed & Approved by: Dr. Harold H. Fain, Assistant Professor of Community Medicine, University of North Texas Health Science Center, USA

Keywords: Nutrient; Dysnutrient; Food circle; Food pyramid; Venn diagram

Abstract

Confronted with the quandary regarding specific nutritional recommendations, a hypothetical diversified diet is envisioned. A Venn diagram, in which each circle represents a separate food, is used to visualize how eating a variety of foods will optimize the nutritive value of a diet by complementing or synergizing nutrients from different foods and by diluting concentrations of individual dysnutrients. Eating a variety of foods may be viewed as a distinctive dietary pattern in itself, lending itself to investigation in comparison to other dietary patterns. A diversified diet over time should outperform the existing dietary types with respect to health benefits because available dietary models are not sufficiently diversified and include foods favored only for historical, geographic, and cultural reasons, and such foods may contain dysnutrients that could be injurious to health.

Nutritional Quandary

Nutrition is complex and is influenced by geography (climate, soil conditions), evolutionary genetic patterns, societal norms, influence of the food industry, and several other variables [1,2]. Nutritional deficits affect the causation and progression of a host of diseases [3], but specific nutritional factors are known only for cardiovascular disease. Although one can choose a diet geared toward improving cardiovascular markers such as lipid profile, no such dietary factors exist for cancers, Alzheimer's disease, or a multitude of other diseases. Even cardiovascular markers do not reliably predict disease and may provide a sense of false security; for example, a high level of so-called good, high-density lipoprotein cholesterol may not necessarily defend against the occurrence of cardiovascular disease [4]. Contrary to the last half century of nutritional science, the recent discovery that atherosclerosis existed in premodern human beings across four diverse preindustrial populations infers that atherosclerosis may not be related to any particular modern lifestyle or dietary pattern [5]. To further complicate matters, it is extremely challenging for laypersons and experts alike to make sense of the frequent conflicting medical reports and industry claims of the benefits or adverse effects of various food products, which results in an admonition to "take nutrition claims with a grain of salt" [6]. In essence, we do not know how to accurately target our eating to prevent disease or to slow down the effects of aging.

One Hypothetical Solution

Given the quandary regarding specific nutritional recommendations, it makes sense to eat a variety of foods. The proposed hypothesis is two-fold. First, no single food will meet all the nutritional requirements of the human body. Second, every food may contain something undesirable, or a "dysnutrient". Dysnutrients, a new term to my knowledge, are broadly defined here as unhealthful substances such as toxins, poisons, or allergens that are present in a food either by nature, intention, or otherwise.

Exposition of the Hypothesis

Envisioning eating variety in terms of food circles

I have used a Venn diagram (Figure 1), in which each circle represents a separate food, to illustrate how eating a variety of foods will optimize the nutritive value of a diet. This is achieved by (a) complementing and/or synergizing nutrients from different foods, and (b) diluting concentrations of potential individual dysnutrients. Fundamentally, many of the foods we consume in Western societies are far from ideal from a nutritional standpoint, yet we often become satisfied with a certain type of diet and so maintain it. Many dysnutrients from the perspective of humans are actually substances that protect plants from predators. We should, therefore, avoid overconsumption of these dysnutrients by increasing the range of foods we eat. Consuming a variety of foods may be safer and may even promote well-being, because a diverse diet might also satisfy one's emotional needs [7]. If we delete the stippled lines in Figure 1a, we obtain Figure 1b. Note the two cloverleaves—one within the other—in Figure 1b; the inner cloverleaf represents the union of nutrients from all foods present in a meal. These cloverleaves will eventually be transformed into two concentric circles if we continue to add circles by increasing the different foods we eat, with an infinite array of foods resulting in perfect circles. We may want to picture the food circles alongside the well-known food pyramid, because mindful eating may make a measurable difference in terms of body weight and longevity. Clearly, my proposed diagram is necessarily simple or "primitive" in comparison to the frequently updated and altered food pyramid and other visual displays of healthful eating, because it is intended to illustrate a single critical concept.

Example of a diversified diet

The concept of food circles may be compared, for example, to combining chemotherapy drugs for which the therapeutic effects of several drugs that act on different targets are maximized and the non-overlapping side effects are minimized. To put it in day-to-day parlance, one should diversify his or her food portfolio just as one

ISSN: 2378-1343

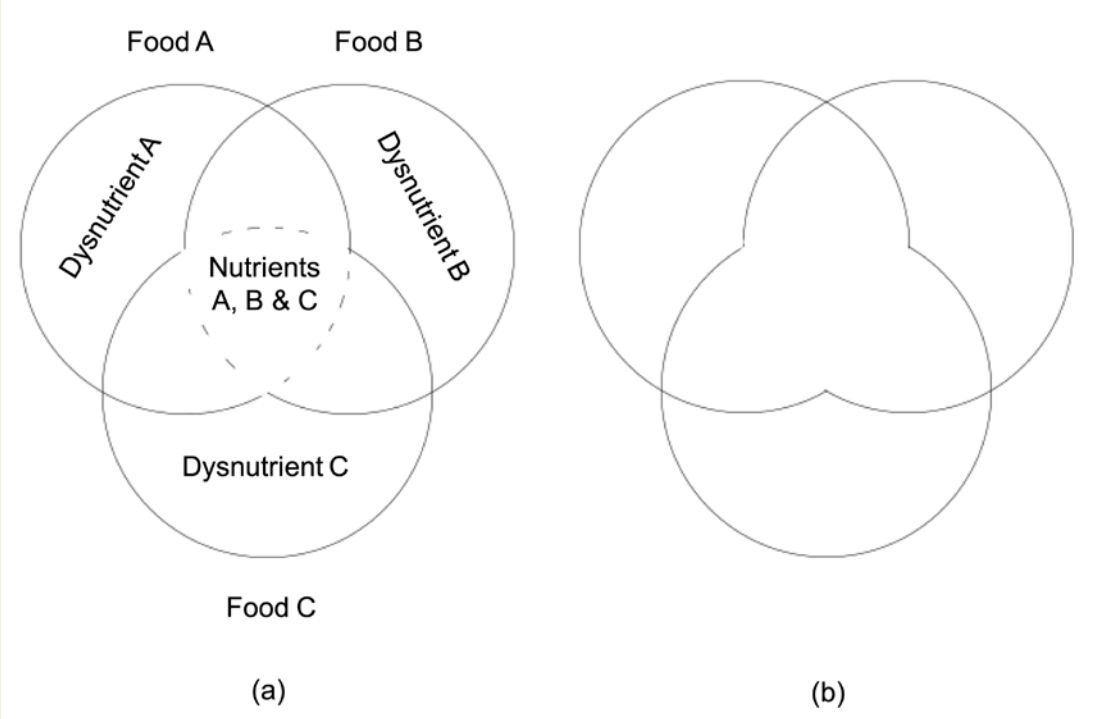

Figure 1: Concept of food circles. Each circle represents a separate food, as it enables application of the power of a Venn diagrammatic approach to visualize the complementarities/ synergies of a diversified diet. Removal of the stippled lines transforms Figure 1a into Figure 1b. See the body of the article for description of the dietary effects of this approach.

would diversify a financial portfolio to minimize risk and improve the return. Thus, our complex bodies require a complex set of nutritional elements that can only be provided by eating a variety of whole foods. A safe approach may be to consume a diversified diet comprising well-balanced and nutritious foods to ensure that systems other than the cardiovascular system are well taken care of, and consequently diseases influenced by diet may be prevented or ameliorated. A diversified diet may consist of, for example seven different grains, seven different vegetables, seven different fruits, and so on, distributed over a week. Bringing such a diet to the table is as easy or difficult as cooking any other diet, which is limited not only by planning but also expense (i.e., income/budget) and availability.

Emerging evidence for food synergy

Food synergy, the idea that eating two foods together is more beneficial than eating either food alone, is a rapidly advancing field [8]. The concept, however, seems to have been in practice for a long time. For example, since ancient times, people in every culture have eaten some combination of beans and grains, the proteins from which are complementary in terms of amino acids [9]. Plant foods contain the full complement of essential amino acids, but at varying levels. It is also well known that curcumin, the bioactive compound present in turmeric root, has a limited bioavailability if consumed alone in tablet form [10]. On the other hand, its absorption is greatly enhanced if eaten together with black pepper [11] or yogurt [12] or in curry form [13]. The antioxidant property of oat phenolics is synergistically improved by ascorbic acid [14]. A combination of tomato and broccoli was shown to be more effective at slowing tumor growth than either tomato or broccoli alone [15]. Finally, evidence is accumulating that specific combinations of phytochemicals may offer better protection against cancer than single compounds (see Ref [16] for review). Eventually, as the knowledge regarding the interactions of various foods is expanded, the underlying mechanisms will be elucidated. Ultimately, as guidebooks map the food-food-body interactions (what may be referred to as "food interactomics"), intelligent diversified diets with targeted objectives can be developed.

Comparative view of a diverse diet vs. traditional diets

Considering food synergy, a well-planned and diversified diet will likely have health benefits over time [8]. If this is the case, one may speculate about the health benefits of a diverse diet in comparison with the health effects of well-known dietary models, such as mediterranean, asian, and western diets [17]. There may exist as many ethnic dietary or culinary models as the number of regions, perhaps even as many as the number of countries in the world. Each such diet may have signature foods unique to a region that offer distinctive health benefits and/or contribute to particular health issues. Existing dietary models have evolved over hundreds or thousands of years for a variety of historical, geographical, and cultural reasons, and thus each such diet has its favored foods. In contrast, one could envision a programmatic diversified diet consisting of a broad food portfolio. Analogous to a diversified financial portfolio, the varied diet is predicted to outperform existing dietary models in health benefits over time. To my knowledge, no specific diversified diet has ever been devised or tested vis-à-vis the classical dietary models. The proposed comparisons should open avenues of research asking for a variety of testable questions seeking to provide answers not only in terms of available laboratory tests such as cardiovascular markers, but also personal happiness, quality of living, long-term health benefits, and the consequent overall health care costs.

ISSN: 2378-1343

Endnote

Eating a variety of foods may be considered as a distinctive dietary pattern in itself, lending itself to investigation in comparison to other dietary patterns. Such a dietary plan may provide an opportunity to turn food, where it is in abundance, into an advantage instead of a potential adversity, as the latter is engendered by limitless consumption of a few favorite foods. It may also help one experience the tastes of a spectrum of foods, which ultimately contributes to the joy of living.

References

1. Simpson SJ, Raubenheimer D (2012) The nature of nutrition: A unifying framework from animal adaptation to human obesity, Princeton University Press, Princeton, New Jersey.
2. Jones DP, Park Y, Ziegler TR (2012) Nutritional metabolomics: progress in addressing complexity in diet and health. Annu Rev Nutr 32: 183-202.
3. Ross AC, Caballero B, Cousins RJ, Tucker KL, Ziegler TR (2012) Modern nutrition in health and disease/Edition 11. Lippincott Williams & Wilkins.
4. Voight BF, Peloso GM, Orho-Melander M, Frikke-Schmidt R, Barbalic M, et al. (2012) Plasma HDL cholesterol and risk of myocardial infarction: a mendelian randomisation study. Lancet 380: 572-580.
5. Thompson RC, Allam AH, Lombardi GP, Wann LS, Sutherland ML, et al. (2013) Atherosclerosis across 4000 years of human history: the Horus study of four ancient populations. Lancet 381: 1211-1222.
6. (2007) Take nutrition claims with a grain of salt. Dietary studies sponsored by the food industry are often biased. Sci Am 297: 38.
7. Kahn BE, R. Ratner R (2005) Variety for the sake of variety? Diversification motives in consumer choice In: Ratneshwar S and Mick DG, Editors, Inside consumption: Frontiers of research on consumer motives, goals, and desires, Routledge, London, pp. 1-34.
8. Jacobs DR, Tapsell LC (2013) Food synergy: the key to a healthy diet. Proc Nutr Soc 72: 200-206.
9. Young VR, Pellett PL (1994) Plant proteins in relation to human protein and amino acid nutrition. Am J Clin Nutr 59: 1203S-1212S.
10. Gota VS, Maru GB, Soni TG, Gandhi TR, Kochar N, et al. (2010) Safety and pharmacokinetics of a solid lipid curcumin particle formulation in osteosarcoma patients and healthy volunteers. J Agric Food Chem 58: 2095-2099.
11. Kulkarni SK, Bhutani MK, Bishnoi M (2008) Antidepressant activity of curcumin: involvement of serotonin and dopamine system. Psychopharmacology (Berl) 201: 435-442.
12. Gutierres VO, Pinheiro CM, Assis RP, Vendramini RC, Pepato MT, et al. (2011) Curcumin-supplemented yoghurt improves physiological and biochemical markers of experimental diabetes. Br J Nutr 108: 440-448.
13. Seshi B (2012) Potential medical benefits of eating curry: A self-reported case and review. Int J Clin Med 3: 587-594.
14. Chen CY, Milbury PE, Kwak HK, Collins FW, Samuel P, et al. (2004) Avenanthramides and phenolic acids from oats are bioavailable and act synergistically with vitamin C to enhance hamster and human LDL resistance to oxidation. J Nutr 134: 1459-1466.
15. Canene-Adams K, Lindshield BL, Wang S, Jeffery EH, Clinton SK, et al. (2007) Combinations of tomato and broccoli enhance antitumor activity in dunning r3327-h prostate adenocarcinomas. Cancer Res 67: 836-843.
16. de Kok TM, van Breda SG, Manson MM (2008) Mechanisms of combined action of different chemopreventive dietary compounds: a review. Eur J Nutr 47 Suppl 2: 51-59.
17. Ogce F, Ceber E, Ekti R, Oran NT (2008) Comparison of mediterranean, Western and Japanese diets and some recommendations. Asian Pac J Cancer Prev 9: 351-356.