Dietary Supplements in Management and Prevention of Chronic Disease
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Dietary supplement use for both general health and specific applications has been steadily growing, and more than 50% of adults in the US now use at least one supplement daily. This is accompanied by an often well-deserved dose of healthy skepticism on the part of the health care and research communities. However, despite our ambivalence, the pages of many biomedical journals, including this one, continue to fill with reports demonstrating robust in vitro and in vivo bioactivity of select food components and complex extracts as well as a smaller number of clinical trials validating disease-specific applications.

So, with an abundance of high quality scientific literature supporting significant bioactivity of multiple food components, what are the reasons for a generalized distrust of dietary supplements for prevention and management of disease? Clearly one component must be a discomfort with the overwhelming abundance of minimally regulated, poorly supported (or completely unsupported) claims and implications driven by marketers rather than by sound science. However, even conservative, evidence based claims are generally met with skepticism in the nutritional science community. This is a community with a cornerstone belief in the value of healthy diets (despite our disagreements surrounding what constitutes a healthy diet), rather than utilizing food components in a medicinal fashion.

And yet, we continue to investigate food-derived bioactivity and to proclaim its potential value in our grant applications and our published manuscripts. It is now time to take an active role in translating these studies, both positive and negative, into useful, practical approaches that can be utilized as a benchmark for assessing supplement claims. Let us use Resveratrol as an example. This polyphenol, found in the skin of red grapes and other fruits, has been widely demonstrated to serve as a Sirt1 activator, mimicking the effects of energy restriction on lifespan and multiple metabolic outcomes, including diabetes [1-5]. However, most of these effects are only achieved at very high doses that are difficult to obtain in humans, while limited bioavailability and rapid metabolism make achieving therapeutically effective plasma levels a significant challenge. Consequently, promising results from cellular studies, both positive and negative, into useful, practical approaches demonstrated in the in vitro systems that fail when applied to animals and humans.

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