

Spices and Herbs

Improving Public Health Through Flavorful Eating

Linda C. Tapsell, PhD, FDAA

Spices and herbs have a strong history of use across cultures. This use is linked to a fundamental appreciation of the health benefits of food and of the flavor it delivers. The contribution of herbs and spices to the public health effort is represented today through an exciting blend of science, culinary art, and translation to practice. This supplement reports on an important meeting in which leaders from across these domains shared their knowledge and experience. As Dr Dwyer states in the introductory address, health professionals, researchers, and policymakers have a great opportunity to work together to improve consumer eating patterns. This supplement outlines how this opportunity may be realized, enlightened by the study of spices and herbs.

From a science perspective, we have come a long way in the last decade. Early reviews have indicated the potential for research on spices and herbs, particularly in the area of oxidative stress and associated pathologies.¹ Dr Heber's groundbreaking research shows we have moved from simply measuring the oxidative capacity of products. His research involved adding spices to a common food—hamburgers. He then observed decreased urinary malondialdehyde, a marker of oxidation of lipids, and better effects on endothelial function, the clinical consequences of the pathways under study. Likewise, Dr Westerterp-Plantenga and Janssens' research showed that capsaicin from hot red pepper can help produce a negative energy balance through sensory and satiety mechanisms, as well as having effects on energy expenditure and fat oxidation. In a broader clinical sense, Drs West and Skulas-Ray's review of effects on cardiovascular risk factors indicates the evidence continues to mount in favor of spices, particularly in relation to blood risk factors (glucose, cholesterol). Dr Anderson argues that studies on cinnamon are showing effects on blood glucose, insulin resistance, and HbA_{1c} (glycated hemoglobin) and that these effects appear plausible based on

research on associated mechanisms. Establishing an evidence-based framework is complex, but these contributions indicate that scientific support is mounting for health benefits from spices and herbs.

Demonstrating health benefits is one thing, but from a consumer perspective, flavor remains critical. Dr Hill's research, published in the journal *Appetite* this year, shows that adding spices and herbs to lower-fat foods (lean meat, vegetables, pasta) significantly improves consumers' overall liking of the food.² This knowledge has been taken to a range of areas of practice. For example, Dr Berman explores the use of spices and herbs in school nutrition education programs, and Dr Ayoob outlines ways in which clinicians can refer to spices and herbs in dietary counseling. At the production level, the knowledge and experience of the food industry are valuable. Dr S. C. Johnson of McCormick & Company, Inc, provides important insights on developing flavorful foods with spices and herbs and the importance of spice and herb extracts in this process. This information enables us to understand how developing products requires substantial interdisciplinary input. With the Menus of Change program, Mr Drescher of The Culinary Institute of America takes the case of foods that are healthy and flavorful (as well as sustainable and ethical) to the foodservice industry. Meanwhile Dr Tahiri of the Bell Institute of Health and Nutrition at General Mills describes the timeline for improving products, such as through reduced sodium content.

Public health lies in the domain of public policy, in which dietary guidelines, including the *Dietary Guidelines for Americans*, play a pivotal role.³ Understanding the processes and opportunities for dietary guidelines development, as outlined in reviews by Drs Schneeman and Post, is valuable for all who wish to contribute. Arguments can be made for how spices and herbs fit within this scenario,⁴ but as Dr G. H. Johnson points out, the important message from this meeting is that all stakeholders continue to work together. The content of this supplement shows how the various areas of knowledge can be integrated so that different groups can work synergistically towards the common goal of improved public health through flavorful eating.

REFERENCES

1. Tapsell LC (ed). Health benefits of herbs and spices: the past, the present, the future. *Med J Aust.* 2006;185(4):S1–S24.

Linda C. Tapsell, PhD, FDAA, is professor of nutrition and dietetics in the School of Medicine and director of the Smart Foods Centre at the University of Wollongong, New South Wales, Australia.

The author is a member of the McCormick Science Institute's Scientific Advisory Council.

Correspondence: Linda C. Tapsell, PhD, FDAA, Smart Foods Centre, University of Wollongong, Northfields Ave, Wollongong, New South Wales 2522, Australia (ltapsell@uow.edu.au).

DOI: 10.1097/01.NT.0000454724.53541.a0

2. Peters JC, Polsky S, Stark R, Zhaoxing P, Hill JO. The influence of herbs and spices on overall liking of reduced fat food. *Appetite*. 2014;79:183–188.
3. US Department of Agriculture and US Department of Health

- and Human Services. *Dietary Guidelines for Americans 2010*. 7th ed. Washington, DC: US Government Printing Office; 2010.
4. Tapsell LC. Dietary guidelines for health—where do herbs and spices fit? *Nutr Today*. 2008;43(4):132–137.

The Potential of Spices and Herbs to Improve the Health of the Public Through the Combination of Food Science and Nutrition

Johanna T. Dwyer, DSc, RD

The ancient civilizations of China, India, and Arabia valued spices and herbs for their taste, fragrance, preservative effects, and medicinal powers.^{1,2} Today, there is growing interest in identifying the physiologic effects of these ingredients and in learning ways that spices and herbs can increase the acceptability of healthier foods, both prepared and home cooked.

TODAY'S CHALLENGE: IMPROVING HEALTH THROUGH NUTRITION

The link between food and health has never been clearer, and yet dietary change has never been more difficult. Substantial numbers of American adults have intakes of potassium, calcium, vitamin D, and dietary fiber that are lower than recommended levels because many consume suboptimal amounts of vegetables, fruits, whole grains, dairy foods, seafood, and other foods rich in these essential nutrients and food components. New nutrition education tools such as ChooseMyPlate.gov may help some consumers make healthier food choices, but taste reigns supreme, and many continue to eat more calories, fat, saturated fat, and sodium than they need.³

Physiologic Roles of Spices and Herbs

Research has begun to identify not only culinary uses but also other potential benefits of spices and herbs in human health. In the past decade, the number of clinical trials involving spices and herbs listed on ClinicalTrials.gov and funded by public and private sources increased 6-fold. Studies of the health effects of bioactive components found

in spices, herbs, and other botanicals are also being carried out through the National Institutes of Health's funding of Botanical Research Centers and its efforts to translate research findings into practical benefits for human health.

Opportunities for Improving Consumer Eating Patterns

Many opportunities exist to improve Americans' dietary patterns. Today, about 38% of consumers report that they use spices and herbs as alternatives to salt for flavoring foods in an effort to reduce their sodium intake.⁴ Dietitians recognize this approach as being effective, but much more can be done to spread the word. Encouraging consumers to use spices and herbs when cooking, for example, can help reduce the intake of less desirable foods and nutrients, particularly salt, solid fats, and sugar, while increasing the intake of vegetables and other high-fiber foods. Their use can also make menus more interesting. The time is ripe to seize opportunities to build awareness about the taste benefits of spices and herbs and how they can contribute to healthy eating patterns. A small number of consumers rank spices and herbs among the top foods with benefits beyond basic nutrition,⁵ but many others do not perceive the added health benefits of spices and herbs. As the research accumulates that supports health benefits, this state of affairs may change. Finally, and perhaps most importantly, new research suggests that adding spices and herbs to foods and meals can increase the acceptance of healthy foods by making them more flavorful. These new data suggest there is an opportunity to help consumers improve their diets by learning to enjoy novel spices and herbs, experimenting with new recipes, and mastering new cooking techniques (see pages S4–S6, S8–S9, and S14–S15).

CONCLUSIONS

The number of studies about spices and herbs in both the scientific literature and in the popular press has increased dramatically since 2004. Moreover, consumers are demonstrating a preference for foods with more flavor as evidenced by the increased national appeal for regional cooking styles

Johanna T. Dwyer, DSc, RD, is a professor of medicine and community health at Tufts University School of Medicine, Boston, Massachusetts. The author is a member of the McCormick Science Institute's Scientific Advisory Council; owns stock in McCormick & Company, Inc; is the editor of *Nutrition Today*; and is a public trustee of ILSI North America. Correspondence: Johanna T. Dwyer, DSc, RD, Frances Stern Nutrition Center Box 783, Tufts Medical Center, 800 Washington St, Boston, MA 02111 (JDwyer1@tuftsmedicalcenter.org). DOI: 10.1097/01.NT.0000453843.06840.2d