

## **Discussant Commentary:**

### **On Promoting the Good News About Coffee**

Daniel G. Steffen, Ph.D.  
Scientific Relations  
Kraft Foods North America  
Glenview, IL USA

#### ***Introduction***

The history of coffee is replete with pronouncements regarding its effects on humans--every paean extolling coffee's nearly divine quality to energize a mundane life may be matched with an edict banning the evil brew as the scourge of mankind's health. Beginning in the late 1960's, investigators turned to modern scientific methods, especially epidemiological techniques, to study coffee and caffeine. Since then coffee, caffeine or both have been implicated as a risk factor for a well-known litany of diseases or health disorders, including cardiovascular disease, hypertension, stroke, reproductive problems, osteoporosis, liver and kidney disease, various cancers and even mental dysfunction. Some thirty years later, due to improved methodologies and the efforts of the industry, many technical errors in these early studies have been corrected. Most authorities now agree that there is no conclusive evidence linking coffee or caffeine consumed in moderation to any of these ailments.

#### ***New Science***

The preceding presentations in this Conference offer quite contrasting areas of research. Peter Martin's group at the Institute for Coffee Studies explores the interaction of individual coffee compounds with various receptors to understand the mechanism of action of coffee on the adenosine, glucocorticoid and opiod systems. Other work demonstrates that coffee components exhibit antioxidant activity in a classic bioassay. Such learnings may help coffee producers generate products with enhanced levels of components or families of components that promote basic physiological changes leading to health benefits. At the other extreme, Darcy Lima describes a large scale social experiment in Brazil to test the hypothesis that coffee drinking may diminish the use of alcohol among that country's children and adolescents. Despite all the variables inherent in such a field study, Lima's results provide a suggestion that coffee may work as hypothesized. Furthermore, his observations corroborate Martin's data on opiod receptors showing an anti-opiate activity of specific coffee compounds which could be related to reduced alcohol consumption.

The work of these investigators represents only a small part of the research on potential health benefits of coffee. The database of positive coffee attributes is slowly growing with these associations from large epidemiological studies:

- Adults drinking two to three cups of coffee daily had 25% less asthma than non-drinkers.
- In a ten year study from the Harvard School of Public Health, women consuming two or more cups of coffee per day were 65% less likely to commit suicide, data that support earlier findings from San Francisco's Kaiser Permanente group.

- In another ten year study at Harvard, men consuming two to three cups of caffeinated coffee per day showed a 40% reduction in the risk of developing gallstones, with slightly greater benefits at intakes of four or more cups per day.
- In Japan, Italy, and the United States, those drinking three to four cups of coffee a day had an 80% reduction in risk for liver cirrhosis than non-drinkers.
- In work from Harvard, the Mayo Clinic and the US Veterans Administration, intake of three to four cups of coffee per day reduced the risk for Parkinson's disease two- to three-fold.
- A Harvard meta-analysis of colon cancer research in ten countries indicates that people drinking four or more cups of coffee per day had a 25% lower risk of colorectal cancer compared to those rarely or never drinking coffee.

It is not at all clear that these beneficial relationships are strictly due to caffeine. Coffee is much more than caffeine, with nearly 2000 compounds in the final beverage--many being unique products of the roasting process. The work of Martin and many others extends the encouraging observations from epidemiological studies to possible mechanisms suggesting that some of these coffee phytochemicals are bioactive as receptor modulators and as antioxidants. Indeed, the putative protective effects of coffee on Parkinson's disease or suicide are likely mediated through neuronal receptor interactions. On the other hand, the observations on colon cancer and coffee may have a plausible explanation in the antioxidant characteristics of various coffee compounds. This antioxidant capacity may also provide cardiovascular benefits.

### ***Evidence for Consumer Messages***

There is exciting news about coffee. But care must be taken when telling the story. Euan Paul from the Coffee Science Information Center in the United Kingdom asserts that our messages must be believable and always supported by scientific evidence.

How do we evaluate the evidence to support our messages? Among the standards of many regulatory agencies, the general precepts of the United States Federal Trade Commission may serve as a good benchmark. Basically, under its rules, advertising claims must be substantiated by competent and reliable evidence. This means tests, research studies or other relevant expert evidence, conducted and evaluated by qualified persons, using procedures accepted in the profession to give accurate and reliable results. Thus, for statements about coffee and health, the message should be consistent with the supporting evidence. Substantiation issues for such communications may be resolved by considering the following questions:

- How much evidence currently exists?
- Is the evidence uniform or conflicting?
- What do experts (preferably independent) say about the quality and quantity of the evidence?
- What do experts say about the limitations of the evidence or about the language qualifying the message?
- Is everything thoroughly documented?

This approach allows a wide range of flexibility such that different levels of evidence might support different ways to formulate a message. Thus a simple message that coffee contains polyphenols may need only a laboratory measurement. A message that antioxidants in coffee help maintain a healthy cardiovascular system may require measures of antioxidants in coffee, their bioavailability based on normal consumption patterns, some indication of *in vivo* antioxidant activity, and well-designed and executed laboratory and/or clinical studies on markers of cardiovascular health. A statement about the relationship between coffee or one of its components and a disease is in the realm of health claims requiring a much higher level of expert scientific agreement likely based on multiple clinical trials.

## **Talking to the Consumer**

There is some indication that consumers may resist positive messages about coffee. Many have come to accept the beverage with its checkered history. Thus, upon hearing that coffee contains antioxidants, some consumers have protested about unwanted alterations to their coffee—they flatly reject any possibility that coffee may naturally contain substances beneficial to health! After all, consumers have endured years of controversy over the health effects of coffee—the media frenzy and hype; the official government hearings and regulatory reviews; the warnings of self-proclaimed health gurus; the contradictory sound-bites of research experts; the lingering guilt over a steaming cup of a favorite brew. The stories have entered the popular mythology, constantly resurfacing in secondary media outlets and slim paperbacks as new "news"—and in some perverse way the public often chooses to cling to the negative stories. Are they willing to listen to a new story?

The surprising answer could be a resounding YES! The International Food Information Council in Washington, DC, has repeatedly shown that consumers prefer positive health communication. The organization is so confident in this approach that it has embarked on a program called “A New Conversation with Consumers” to promote healthier diets. A “new conversation” about coffee as a health beverage fits nicely with increasing consumer interest in phytochemicals, functional foods and maintenance of personal health. Furthermore, communications about coffee and antioxidants offer a recognizable, consumer-friendly concept with an impressive array of interdisciplinary scientific support. Broad dissemination of the antioxidant message to media and other opinion leaders may facilitate the development of a new image for coffee, hopefully replacing the old myths. As the database on positive health effects grows, the communication pieces can expand to more technical topics accordingly. The critical caveat remains—the message must be simple, truthful, and faithful to the science base.

## **Conclusion**

The coffee industry is seriously rethinking how and what it communicates to consumers about coffee and health. After years taking a defensive stance, and watching the purveyors of tea and, more recently, of chocolate develop positive messages, the industry is poised to promote the beneficial health aspects of its unique beverage. Research in various laboratories has built a foundation for good news about coffee. Industry scientific groups in both the United States and Europe have embarked on programs to support just such research efforts. Investigations in humans need to establish that beneficial coffee components are absorbed in physiologically significant amounts and active forms. Meaningful *in vivo* endpoints of antioxidative activity need to be developed so that controlled human trials can corroborate experimental and epidemiological observations. Likewise, the various health-related possibilities promised by studies in receptor biology need further definition.

It is important that these findings are properly communicated to the interested public—consumers, academics, public health officials, government regulators, and media. The Coffee Science Information Center and the National Coffee Association have recently adopted broad positive communication strategies. With the combination of more definitive human data and solid research-based consumer messages, coffee may be prized for its health benefits in the future just as it is cherished for its organoleptic qualities today.