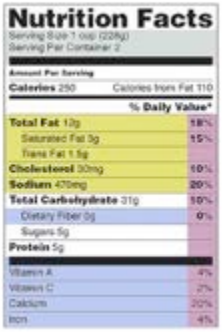
Can you really count on calorie information?

Current high rates of obesity in the United States and frequent discussions about eating healthy have many people counting their calories. But researchers say cooking and processing food can make a significant difference in the number of calories consumed - making current nutrition labels systematically misleading.



The American Association for the Advancement of Science (AAAS) held a conference in Boston this month to discuss "Why a Calorie Is Not a Calorie and Why It Matters for Human Diets."

During the discussions, Harvard University's Rachel Carmody described research in which she and her colleagues found significant contributions from cooking to human energy budgets. Their results "also illuminate a weakness in current food labeling practices, which systematically overestimate the caloric potential of poorly processed foods," and "take inadequate account of food processing."

Highly processed foods are given similar caloric labels as the same foods in an unprocessed state, which does not accurately reflect the biological processes of the human body that impact caloric intake. So, according to these researchers, a Snickers bar label actually underestimates the amount of calories gained, while raw foods are contributing fewer calories than current food tables suggest.

"For example, raw foods are systematically less energy-producing than the same foods cooked," said Harvard University's Richard Wrangham. But USDA displays data for the public indicating that cooking foods does not consistently make a difference in their energy value. "The public is thus misled," he said.

For more than a century, the energy value of foods has been assessed using the Atwater Convention. Wrangham suggested that the Atwater Convention conveys realistic values for foods that are highly digestible, such as white bread.

"However, in two circumstances the Atwater Convention seriously over-estimates the caloric value of foods," he said, including if foods are less than 100 percent digestible in the small intestine, like some legumes and if the food requires a high cost of digestion, spending an especially long time in the gut.

In challenging the ideas of the Atwater Convention, Carmody said researchers calculated the additional energy from processed diets in experiments on mice. They found cooking increased energy gain from beef 15 percent and increased in sweet potatoes by 39 percent.

"These differences are not reflected in nutrition labels presented to consumers," she said.

The failures of the Atwater Convention are reflected explicitly in the obesity epidemic, noted Boston Children Hospital's David Ludwig.

"People look at the calories without recognizing each stage of the process from themouth digestion to gut absorption and the effects of those calories," he said. "All of these processes are not captured by the current calorie paradigm. The simplistic notion of calorie-in, calorie-out does not provide a useful tool to address the obesity epidemic."

Carmody noted that that although processing and cooking foods result in greater calorie intake, essentially due to less work needed by the human digestive system, the human body still needs foods to be cooked and processed.

"We're not suggesting consumers go on a 100 percent raw diet by any means," she said, noting that raw diets can be harmful. "Human bodies have become adapted to a diet that is cooked."

She suggested that consumers should "look past the label" and consider how the body digests and absorbs the food. "Consider how much has been done to food," she said. "You could do well to consume less processed food if you're trying to lose weight."

While the AAAS speakers noted that the scientific community generally concedes that changes are needed to food labeling systems and could have a "profound effect on the health of individuals," they also agree the process will be a slow one.

"There's quite a lot of willingness to implement a new system," said Geoffrey Livesey, of Independent Nutrition Logic Ltd.,. "When this was examined by FAO in 2003, I can tell you there were about twenty different reports all favoring…a change to a biochemical approach."

He said FAO and regulatory authorities of individual nations need to implement recommendations, and to bring in a new calculation system.