Several big food and beverage companies are looking at a new ingredient in the battle for health-conscious consumers: a chemical that tricks the taste buds into sensing sugar or salt even when it is not there.

Kraft Foods, Nestlé, Coca-Cola and Campbell Soup are all working with a biotechnology company called Senomyx, which has developed several chemicals, most of which do not have any flavor of their own but instead work by activating or blocking receptors in the mouth that are responsible for taste. They can enhance or replicate the taste of sugar, salt and monosodium glutamate, or MSG, in foods.

By adding one of Senomyx's flavorings to their products, manufacturers can, for instance, reduce the sugar in a cookie or salt in a can of soup by one-third to one-half while retaining the same sweetness or saltiness.

Now, for instance, a 10 3/4-ounce can of Campbell's Home-style chicken soup,
which the company says contains two and a half servings, has more than 2,300 milligrams of sodium. That would probably be cut to a little over 1,500 milligrams when the chemical is added. (The government recommends consumption of no more than 2,400 milligrams of sodium a day.)

Unlike artificial sweeteners, Senomyx's chemical compounds will not be listed separately on ingredient labels. Instead, they will be lumped into a broad category - "artificial flavors" - already found on most packaged food labels.

"We're helping companies clean up their labels," said Senomyx's chief executive, Kent Snyder.

Senomyx, based in San Diego, uses many of the same research techniques that biotechnology companies apply in devising new drugs. Executives say that a taste receptor or family of receptors on the tongue or in the mouth are responsible for recognizing a taste. Using the human genome sequence, the company says, it has identified hundreds of those taste receptors. Its chemical compounds activate the receptors in a way that accentuates the taste of sugar or salt. It is still experimenting to determine the most potent compounds, its chief scientist, Mark Zoller, said.

While food safety experts applaud efforts to reduce salt, MSG and sugar, they expressed concerns about the new chemicals, saying that more testing needed to be done before these were sold in food.

But Senomyx maintains that its new products are safe because they will be used in tiny quantities.

Kraft, Nestlé, Coca-Cola and Campbell Soup have contracted with Senomyx for exclusive rights to use the ingredients in certain types of food and beverages, although the companies declined to identify those categories.

Elise Wang, an analyst at Smith Barney, said that Kraft was planning to use Senomyx's sweet flavoring to reduce the sugar in powdered beverages like Kool-Aid by one-third. Campbell Soup, she said, is looking at cutting sodium levels by a third with the salt flavoring.
"There's applicability for our soups, sauces and drinks like V8," a spokesman for Campbell, John Faulkner, said.

A Kraft spokesman declined to offer specifics on the company's relationship with Senomyx, but said that Kraft was committed to reducing the sugar and salt levels in many products. Nestlé and Coke also declined to comment.

Senomyx's salt enhancer, in particular, has the potential to be a boon to the food industry. For years, corporate scientists have been looking in vain for ways to reduce sodium levels in packaged food without losing flavor.

"It's a real challenge," said Christine M. Homsey, senior research food scientist at Food Perspectives, a consulting firm in Plymouth, Minn. "Nobody's come up with anything even close to ideal."

The Center for Science in the Public Interest, an advocacy group based in Washington, is seeking to get the Food and Drug Administration to pay more attention to the high sodium levels in packaged foods. In February, it filed a lawsuit seeking to force the F.D.A. to regulate salt as a food additive. The effort, if successful, could spur companies to limit salt in their products.

Mr. Synder said that Senomyx's salt enhancers were still in the development phase and would not appear in foods for at least two years. The company's most advanced product, he said, is its replacement for MSG, which last month received safety approval from the Flavor and Extract Manufacturers Association. He expects food items with this product to appear in supermarkets sometime in the first half of next year.

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