

Phytosterols for Heart Health

By Teresa Esquivel, Managing Editor

Cholesterol is not all bad. Our livers produce this lipid to build cell walls, produce some hormones and create bile salts that help us digest fat. But many Americans end up with artery-clogging amounts of the waxy substance by ingesting too much animal-based, cholesterol-containing food. According to the American Heart Association, Dallas, more than 106 million U.S. adults have total blood cholesterol levels at or above 200 mg per dL, putting them at risk for coronary heart disease (CHD).

Phytosterol solutions

Consuming less fat from animal sources is a healthy step in the right direction, but lowering cholesterol levels isn't all about deprivation. The National Cholesterol Education Program (NCEP), Bethesda, MD, recommends daily consumption of foods that contain plant stanols and sterols, collectively called phytosterols. Phytosterols are similar to cholesterol in structure and function. As such, they compete with cholesterol, blocking its absorption from the digestive tract into the bloodstream.

The NCEP encourages 2 grams per day; most Americans consume an average of 150 to 450 mg per day of phytosterols.

FDA also stands behind the positive phytosterol-CHD link, granting the following health claim, "Diets low in saturated fat and cholesterol that include at least 1.3 grams of plant sterol esters or 3.4 grams of plant stanol esters, consumed in two meals with other foods, may reduce the risk of heart disease."

Esters make it easier

Although phytosterols can be found in some vegetable oils, nuts, grains, fruits and vegetables, it can be difficult to meet the recommended daily consumption levels. To help fill the gap, sterol esters and stanol esters can be added to food products.

Plant stanol ester is currently available in three forms: solid, liquid and powder, according to Ritva Lahtinen, product development manager, ingredients division, Raisio, located in Raisio, Finland. The solid, she says, can be used for dairy and non-dairy products, spreads and beverages; liquid is suitable for use in oils, cold-processed foods and low-fat spreads; and powder is used in breads, ready-mix and premix foods.

The solid and liquid forms have "handling characteristics similar to fats," Lahtinen says. "Spreads, bread and snacks can be made with conventional production methods. Adding the fat-type ingredient to dairy products or beverages requires melting and emulsification, like homogenization. Powder is added to products just like any other dry ingredient." The plant-stanol-ester solid is used as a melted form at 50 to 60°C, and the liquid at 30 to 40°C.

A line of plant sterol esters from ADM, Decatur, IL, includes several ingredients for specific applications, including an ester that is soluble in oils and fats for salad dressings and margarine. Another is "micronized for use in applications where fine texture is critical," says J. J. Mathieu, technical services, ADM. "Our plant sterol esters-emulsifier complex is designed to be used in milk-type products. It is fully water-dispersible, just like a

powder coffee creamer.” Although plant sterols and plant sterol esters are typically hydrophobic, these ingredients are stable and readily dispersible in beverages.

Such user-friendly ingredients are likely to launch phytosterols into the mainstream, Mathieu says. “It is likely that a major fast-food chain will eventually consider offering customers plant-sterol-containing products,” he says. “It could be a sterol-based coffee creamer or a bakery product. This would instantly create a captive market of repeat customers wanting to keep their cholesterol in check in a most-convenient way. The fast-food chain would also be sending a message of caring for its customers.”