

# Healthy plant sterols: A daily 'drip' is best

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Low-density lipoprotein (LDL or "bad") cholesterol is lowered most when plant sterols are consumed in small amounts throughout the day rather than in one large amount each day, according to new ARS research. Margarine products are often enriched with plant sterols to lower cholesterol.

(PhysOrg.com) -- Plant-derived sterols and stanols are known to be heart healthy compounds. When consumed in amounts greater than those found naturally in foods, these compounds lower blood cholesterol concentrations in humans. To help consumers gain this benefit, food companies add sterols and stanols to foods.

Now, authors of a U.S. Department of Agriculture (USDA)-supported study have found that [blood plasma](#) low-density lipoprotein (LDL or "bad" [cholesterol](#)) is lowered most when plant sterols are consumed in smaller amounts more often throughout the day, rather than in one large amount each day.

Numerous clinical trials have shown that consuming foods enriched with at least 0.8 grams and up to 3 grams of plant sterols or stanols daily lowers LDL cholesterol. Margarine spreads or orange juice enriched with the compounds, for example, often are consumed once daily as part of breakfast.

Researcher Alice Lichtenstein and her colleagues studied the effect on blood cholesterol levels of giving volunteers plant sterols once in the morning, compared with giving sterols three times a day. Lichtenstein is director of the Cardiovascular Nutrition Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University in Boston, Mass. The research was partially funded by the Agricultural Research Service, USDA's principal intramural scientific research agency.

Lichtenstein analyzed lipid (blood fat) profiles of 19 study volunteers from blood samples taken after each of three 6-day study phases—a relatively short intervention period.

For the control phase, the volunteers were given a precisely controlled weight-maintaining diet, with no plant sterols. For the second phase, the volunteers were given the same diet, but with a standardized amount of 1.8 grams of plant sterols in margarine with breakfast. For the third phase, the volunteers were given the same diet, but also 1.8 grams of plant sterols divided equally and given during each of the three meals per day.

Volunteers consumed their regular, habitual diets for two weeks between each phase of the study.

Among the group that received the plant sterols three times per day, measures of LDL cholesterol decreased by 6 percent, and this decrease was attributed to a substantial reduction in cholesterol absorption

compared with the control phase of the study. The 2009 study was published in the *European Journal of Clinical Nutrition*.

Provided by USDA Agricultural Research Service

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