

Study shows flavanol antioxidant content of US chocolate and cocoa-containing products

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A recent study confirms that the antioxidants and other plant-based nutrients in chocolate and cocoa products are highly associated with the amount of non-fat cocoa-derived ingredients in the product. The study expands on previously published results.

The study, published in the [Journal of Agricultural and Food Chemistry](#), was conducted by a scientific team from The Hershey Company, Brunswick Laboratories, and Cornell University, compared the detailed [cocoa](#) antioxidant contents of commercially available chocolate and cocoa-containing products sold in the United States.

The flavanol compounds, with the exception of catechin, correlated very well with total polyphenols, the non-fat cocoa solids, and to a slightly lesser degree with the calculated % cacao in the products. "These studies reconfirm that the amount of flavanols, whether large or small, in products like [dark chocolate](#), milk chocolate and cocoa powder are closely tied to the level of brown cocoa particles in the products." said David Stuart Ph.D., Director of Natural Products at Hershey's, who led the research team.

In the study, the top-selling three or four brands of natural cocoa powder, unsweetened baking chocolate, dark chocolate, semi-sweet chocolate chips, milk chocolate, and chocolate syrup were purchased across the United States. Each product was tested for antioxidant activity, total polyphenols, and individual flavanol monomers and oligomers. These results were compared to the amount of nonfat cocoa

solids and total polyphenols in each product, as well as to the calculated percent cacao.

The weaker correlation between catechin (a flavanol monomer present in all samples) and levels of non-fat cocoa solids, total polyphenols and calculated % cacao, was attributed by the researchers to differences in manufacturing processes. It is known from other work that epicatechin, the major flavanol monomer present in the samples, can be converted to catechin during roasting and alkali processing.

When products were classified by their composition, each category, except dark chocolate and semi-sweet baking chips which are very close in formulation, separated from each other. The products with the highest level of flavanol antioxidants were cocoa powders, followed by unsweetened baking chocolate, dark chocolate and semi-sweet chips, then milk chocolate and finally chocolate syrup.

"Being able to fully measure and communicate the levels of flavanol antioxidants in products is increasingly important for studying the potential health benefits of cocoa and chocolate and providing information to consumers," said Debra Miller, Ph.D., Director of Nutrition at The Hershey Company.

This scientific publication is part of series of papers from the Hershey Center for Health and Nutrition® to investigate and communicate to both the scientific community and the public important compositional information regarding typical [chocolate](#) and cocoa-containing products.

Source: The Hershey Company

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