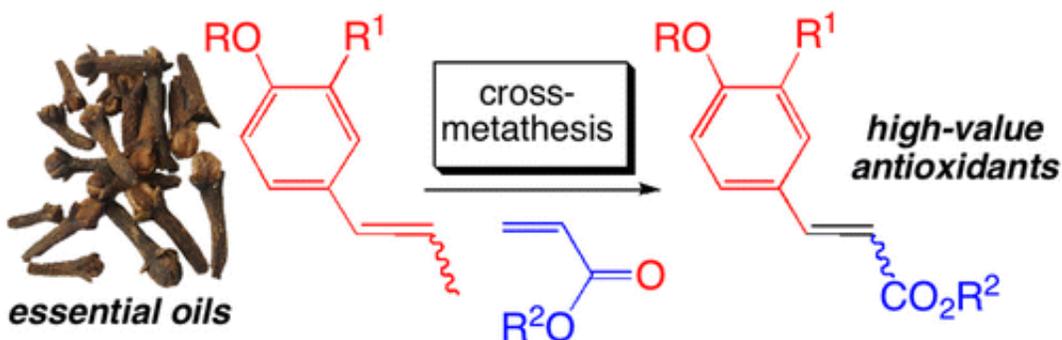


New twist on using biomass for perfume, cosmetic, personal care products

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In a new approach for tapping biomass as a sustainable raw material, scientists are reporting use of a Nobel-Prize-winning technology to transform plant "essential oils"—substances with the characteristic fragrance of the plant—into high-value ingredients for sunscreens, perfumes and other personal care products. The report on the approach, which could open up new economic opportunities for tropical countries that grow such plants, appears in the *Journal of the American Chemical Society*.

Deryn Fogg, Eduardo dos Santos and colleagues explain that breaking down plant material into ingredients for making commercial products is getting much attention as a sustainable substitute for raw materials now obtained from petroleum. They decided to test a complementary

approach, which involves enhancing the complexity of substances found naturally in plants in ways that form antioxidants and other components of cosmetics and perfumes. Current methods for making some of these ingredients from plants are time-consuming, costly and wasteful. That's why the scientists turned to "metathesis"—topic of the 2005 [Nobel Prize in Chemistry](#)—to make personal care product ingredients from plant essential oils.

They describe use of metathesis in the laboratory to transform compounds in essential oils into highly valuable personal care product ingredients. "These methodologies offer the potential for economic expansion via the sustainable cultivation and elaboration of high-return source species in the [tropical countries](#) that represent the major producers of essential oils," say the researchers.

More information: "Chemical Plants: High-Value Molecules from Essential Oils" *J. Am. Chem. Soc.*, 2012, 134 (46), pp 18889–18891. [DOI: 10.1021/ja310054d](#)

Abstract

As society faces a future of dwindling petrochemical supplies at increasing cost, much attention has been focused on methods to degrade biomass into renewable commodity-chemical building blocks. Reported here is a powerful complementary approach that amplifies the complexity of molecular structures present in plant materials. Essential-oil phenylpropenoids are transformed via acrylate cross-metathesis into potent antioxidants that are widely used in perfumery and cosmetics, and in treating disorders associated with oxidative damage.

Provided by American Chemical Society

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