

PeriodicGraphics

With Compound Interest

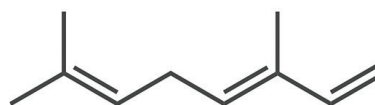
A collaboration between C&EN and Andy Brunning, chemistry educator and author of the popular graphics blog Compound Interest. To see more of Brunning's work, go to compoundchem.com.

THE CHEMISTRY OF DAFFODILS

Daffodils are one of the characteristic flowers of spring. Here, we examine the chemical compounds behind their aroma and color as well as some beneficial and not-so-beneficial ingredients.

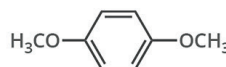


AROMA COMPOUNDS IN DAFFODILS

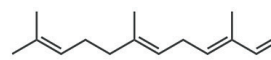


(E)- β -OCIMENE

The aroma of daffodils is caused by a mixture of organic compounds. One of the primary constituents is (E)- β -ocimene, which has a woody, floral smell. Other minor constituents include (E,E)- α -farnesene (apple aroma) and 1,4-dimethoxybenzene (sweet aroma).

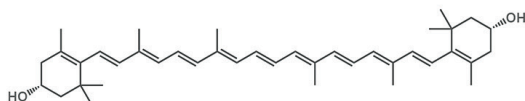


1,4-DIMETHOXYBENZENE



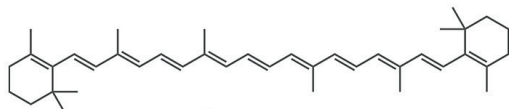
(E,E)- α -FARNESENE

COLOR COMPOUNDS IN DAFFODILS



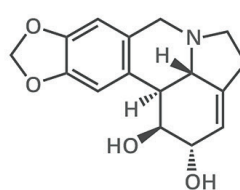
ZEAXANTHIN

The color-causing compounds in daffodils are carotenoids. These include β -carotene, the chemical that also gives carrots their orange color, and zeaxanthin, a yellow pigment.

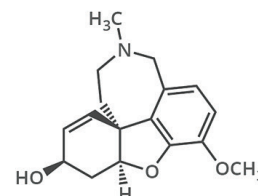


β -CAROTENE

POISON & MEDICINE



LYCORINE



GALANTAMINE

Daffodils contain several poisonous alkaloid compounds, including lycorine. When these are ingested, they can cause severe vomiting and diarrhea. The alkaloid galantamine, however, has been used to treat the symptoms of Alzheimer's disease.



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