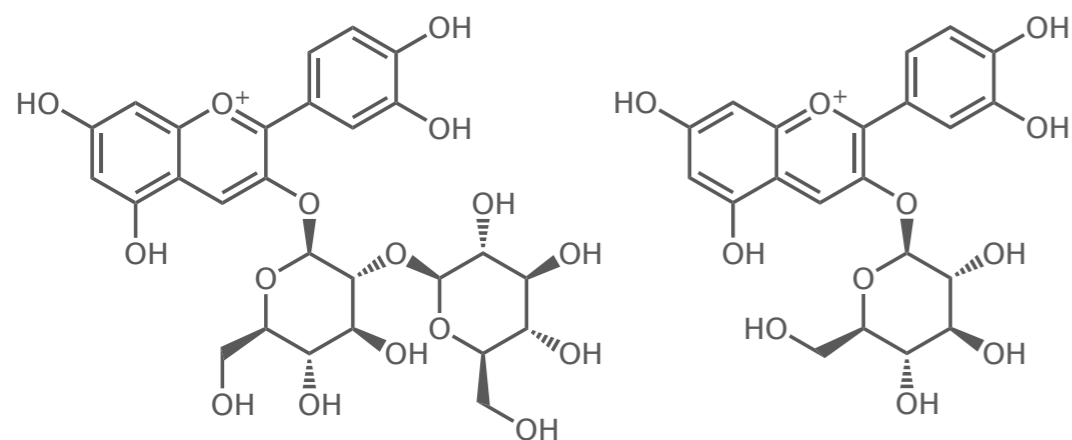


THE CHEMISTRY OF POPPIES: COLOURS AND OPIUM

WHAT CAUSES THE COLOUR OF POPPIES?

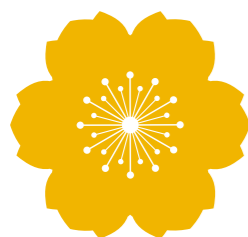
The red colour of the common poppy, *Papaver rhoeas*, is due to anthocyanin pigments in the petals. There are a number of different pigments present, including cyanidin 3-sophoroside, commonly known as meconyanin, and cyanidin 3-glucoside.



CYANIDIN 3-SOPHOROSIDE

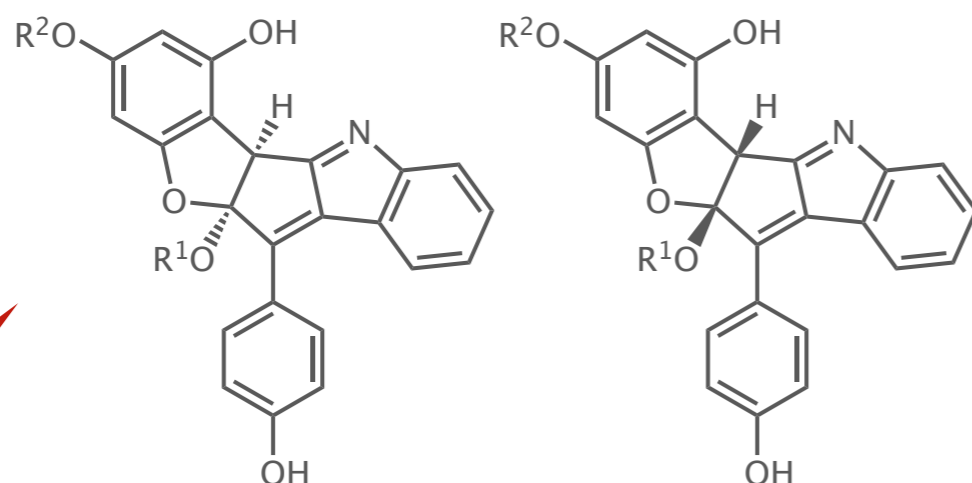
CYANIDIN 3-GLUCOSIDE

Other red poppies also contain anthocyanins, but some other species of poppy contain additional pigments. The yellow colours of the Iceland poppy (*Papaver nudicaule*), and alpine poppy (*Papaver alpinum*) are due to pigments called nudicaulins.



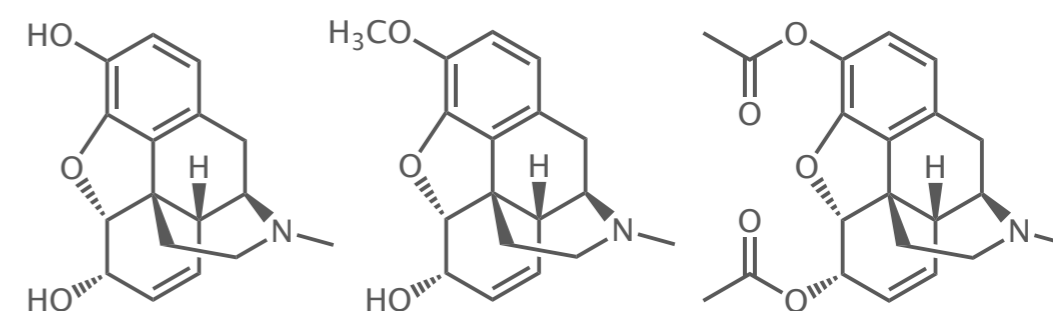
NUDICAULINS

R^1 and R^2 = variable sugar groups



POPPIES, OPIUM AND ALKALOIDS

The opium poppy, *Papaver somniferum*, has been used in medicine for thousands of years. A milky fluid, opium, can be extracted from the unripe seed capsule. It contains the alkaloids morphine, codeine and papaverine. Heroin (diamorphine) can be derived from morphine. Both morphine and heroin are powerful and addictive painkillers. In some countries cultivation of opium poppies is illegal.

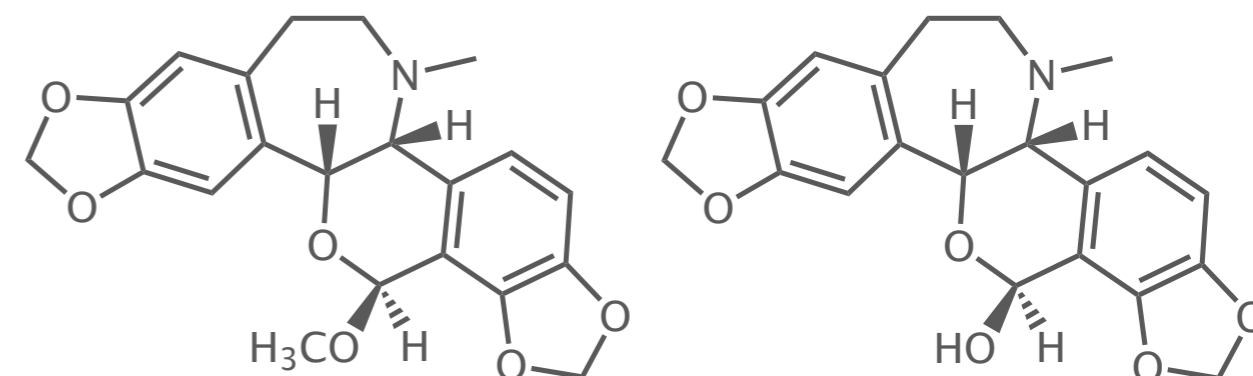


MORPHINE

CODEINE

DIAMORPHINE

The common poppy contains different alkaloids, including rheadine and rheagenine. These alkaloids only have very mild pain-killing properties, and are non-addictive.



RHREADINE

RHREADINE

