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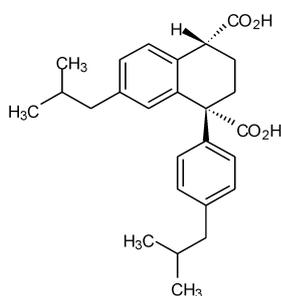
Epichem shines a light on pharmaceutical impurities with x-ray crystallography

Epichem has harnessed the power of single crystal x-ray diffraction techniques to unambiguously establish the structures of a number of closely related pharmaceutical impurities for the first time.

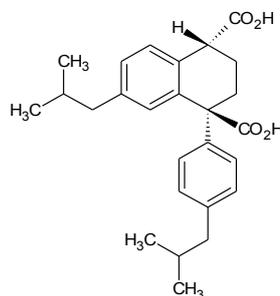
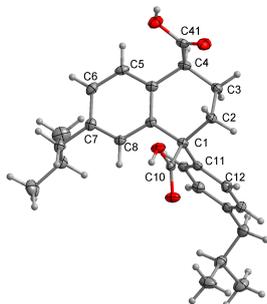
Many pharmaceuticals and their related impurities contain more than one asymmetric carbon atom. In such circumstances, closely related substances called diastereoisomers are likely to be present as impurities. The very similar structures of diastereoisomers makes their separation and identification very difficult. For this reason, reference standards of these substances are sometimes sold as mixtures of diastereoisomers, or worse, their presence often goes undetected.

Epichem's experienced team of chemists have been tackling this challenging problem with considerable success and have recently separated and identified two sets of diastereoisomeric impurities for ibuprofen and phenylephrine as shown below. Once we had achieved the difficult separation of the diastereoisomers we needed a technique to determine which was which. Typically, NMR spectroscopy is the tool of choice for structure elucidation but in these cases the similarity of the structures and the demand for absolute certainty in our assignment required us to take the extreme step of analysing the isomers by x-ray crystallography. This technique involves shining an x-ray beam on a single crystal of the material and then generating a three-dimensional picture of the structure from the resulting diffraction pattern of the x-rays, providing the degree of certainty required by our customers and regulators.

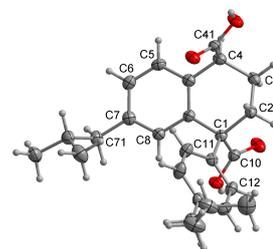
Ibuprofen manufacturing impurities: BP/EP Impurity G – now available as individual isomers, each purified and fully characterised as EPL-AA195 and EPL-AA196.



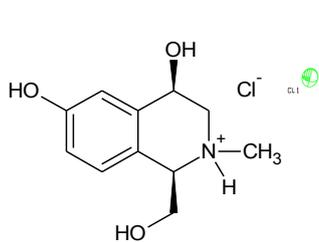
EPL-AA195



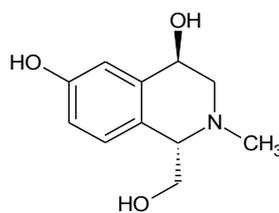
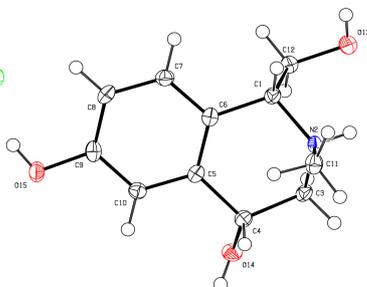
EPL-AA196



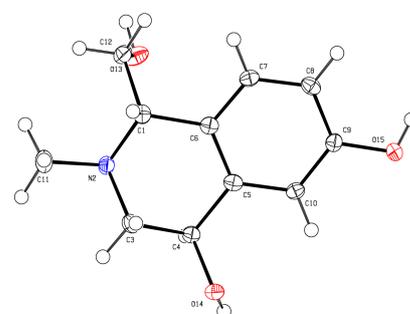
Phenylephrine glycoaldehyde degradant: Now available as individual isomers, each purified and fully characterised as EPL-AA202 and EPL-AA203.



EPL-AA202



EPL-AA203



For further information about how Epichem can assist you with the synthesis or identification of new pharmaceutical impurities and degradants please email Dr John Moursoundis, Head of Fine Chemicals & Technical Services (John.Moursoundis@epichem.com.au).

These products and many more are available for immediate delivery. Visit www.epichem.com.au for a full list of products or email sales@epichem.com.au.