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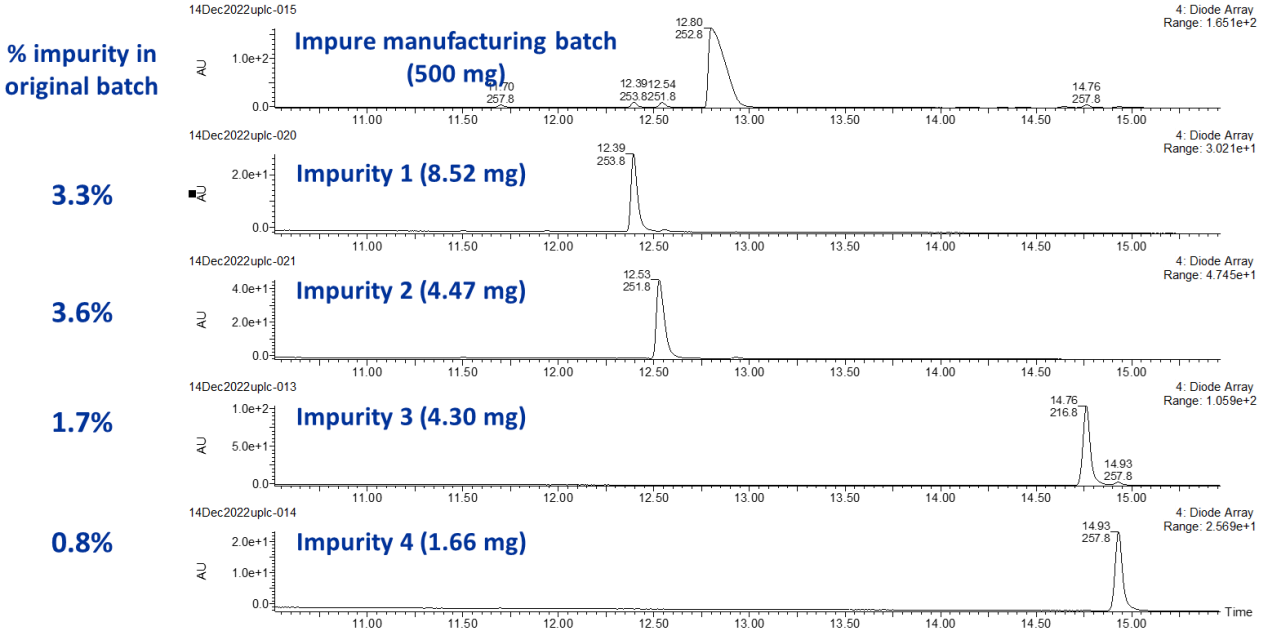
HYPHA DISCOVERY

Metabolites and molecules for tomorrow's drugs

API impurities and degradation products

Purification and identification by cryoprobe NMR



Anonymised client project in which four impurities were isolated and identified from a drug manufacturing batch by Hypha Discovery scientists. Structures were elucidated using cryoprobe NMR spectroscopy.

The safety of a drug is impacted by it's susceptibility to form degradation products, and the existence of any impurities introduced during the manufacturing process. To meet regulatory guidelines, significant degradation products or impurities must be identified. This involves isolation and definitive structure elucidation of the degradant or impurity, typically by NMR spectroscopy. Purified amounts of impurities may be required for use as analytical standards, or for safety assessments.

Purification and structure elucidation

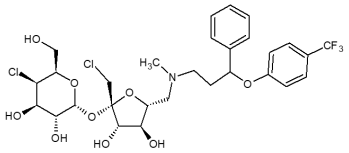
Hypha scientists are adept at purifying small amounts of impurities, metabolites and degradation products from complex matrices in which they form the minor component.

Definitive identification of the structures is performed by interpretation of NMR spectra acquired using a 700 MHz machine equipped with a 1.7 mm cryoprobe. Only small amounts of purified material are needed e.g. ~100 micrograms. Purifications can be scaled to provide more material.

Further amounts of oxidized degradation products of the API can be made using Hypha's chemical synthesis and biotransformation methods. This involves screening the drug against a panel of conditions to identify a suitable method for scale-up.

[1] Work done for Neuropharm, data now owned by Herscu Laboratory.

Identification of Fluoxetine Storage Impurities[1]



Hypha purified and identified two sucralose conjugates of fluoxetine, formed during a study where the drug had been stored at 50°C for 2 months. Simulation of the reaction at 50°C for 7 days permitted purification and identification of two sucralose conjugates. Subtle differences in the NMR spectra revealed the presence of stereoisomers resulting from the reaction of sucralose with racemic fluoxetine.

Features

- Purification from manufacturing batches and shelf life study samples
- Structure elucidation by cryoprobe NMR
- Panel of late stage chemical oxidation conditions and biotransformation methods to synthesise mg-g amounts

For more information contact us at
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