CASE STUDY

Fast UHPLC methods as a platform technology for expedited PR&D decision-making

The challenge

CatSci was tasked with designing a new bromination method for a key reaction intermediate. Use of bromine rendered the previous process unsuitable for a larger campaign and would require expensive and time-consuming alterations to the plant.

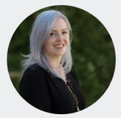
How?

CatSci's analytical team have in-depth method development experience (average ~9yrs/person) in both pharmaceutical CMO and PR&D, which, combined with expertise in high throughput approaches, design of experiment and *in silico* tools facilitated development and deployment of an efficient UHPLC method screening protocol.

The achievement

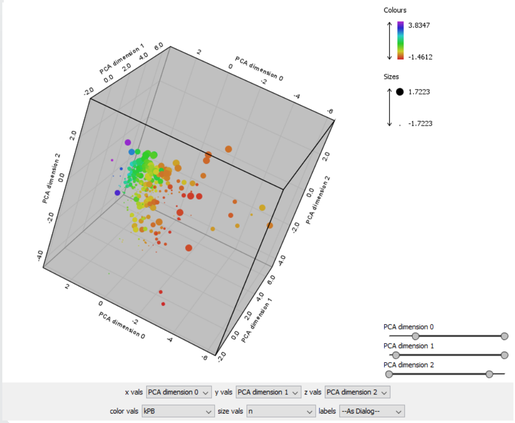
A four-column, two mobile phase-pair combination and a Waters i-class UHPLC with UV and mass spectrometry detection allowed rapid screening of 8 generic analytical methods over just 120 minutes. This automated first-pass screening protocol has proven able to separate ~70% of compounds so far analysed. This protocol acts as the first part of CatSci's method development strategy and has resulted in an accelerated time to decision by at least 85%, and an enhanced ability to focus on higher value analytical chemistry problem solving. Also, this method screening protocol can be implemented routinely with expanded column selection and can increase the capacity for large scale campaign testing.






The team: Dr Siân Forsyth, Gareth Tutton, Beth Rees, Duncan Thompson

Screening Column selection using PCA



Screening Mobile Phases

Low pH

A: 90 % H_2O, 10 % MeCN, 0.03 % TFA

B: 100 % MeCN, 0.03 % TFA

High pH

A: 90 % pH 8.2 NH_4HCO_2, 10 % MeOH

B: 10 % pH 8.2 NH_4HCO_2, 90 % MeOH

3-minute gradient

Facts and Figures

Time saving
>85%

One variable at a time: **up to 13 hours**

vs

HT screening : **2 hours**

Water Waste
90% less

Solvent Waste
90% less

The kit:

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