Novel chemical synthesis technology for the production of isotope labelled building blocks

Researchers at the University of East Anglia have developed an exceptionally mild technique for incorporating single or multiple stable isotopes into compounds with absolute confidence that the isotope(s) are exactly where they were designed to be. Single or multiple isotope combinations based on deuterium, carbon-13, oxygen-18 and nitrogen-15 can be readily incorporated.

Features
• Simple and low cost compared to existing multi-label incorporation methods
• Single or multiple identical or different isotopes can be installed
• > 95% incorporation for single and multiple isotopes
• No substitutions or misplacing
• No detectable evidence of isotope scrambling
• Water and nitrogen only by products
• Straightforward protocol
• Multi-component one-pot reaction

Opportunity
UEA is offering the opportunity to use this technology to create bespoke, single or multi-isotope labelled compounds. Contact is welcomed from commercial collaborators.
Efficient synthesis of high-value compounds

High fidelity isotope incorporation can be achieved using this green, metal-free synthesis protocol; a series of isotope labelled and optically active ‘high-value’ building blocks can be readily synthesised with excellent levels of isotope incorporation (>95%) and optical activity (>90%) so no re-submission is required.

Developing mild and efficient stable isotope incorporating protocols that generate mission critical molecules is very important to a diverse array of industries, these include: pharmaceutical, biotechnology, analytical, security, environmental, agrochemical as well as high and emerging technology based sectors.

Development

The isotope labelled building blocks have been transformed into diverse motifs with a wide variety of structure and function demonstrating the versatility of these ‘lynch-pin’ molecules. These include aza and amino sugars, alkaloid analogues, optically active vicinal amines, amino alcohols, a-, b-amino acids, medium-ring amides, bicyclic and g-lactones, bicyclic amino ethers, spiro heterocycles, oxazolidin-2-ones, chiral non-racemic auxiliaries, imidazolines, b-lactams, pyrrolidines, 5H-pyrrolo[1,2-c]imidazoles, quinoxalines, oxazoles, indolin-2-ones and many others.

Diverse applications

Multiple resonance NMR non-invasive in vitro real time drug inhibition

Multiple resonance NMR non-invasive whole body analysis

SOS NMR, protein ligand binding

Isotope enhanced protein-protein

Isotope enhanced protein-protein

Metabolic Profiling

Multiple resonance NMR non-invasive in vitro real time drug inhibition

Molecular imaging / pharmacokinetics in drug development

Isotopic substitution for new drugs and drug-target studies

Neutron scattering for protein folding and structure analysis

Protein mixture analysis via isotope-coded affinity tags

IP Status

International (PCT) patent application filed.

Get in touch

We welcome enquiries from interested parties. Please contact us to discuss this technology opportunity further.