Specialists in Internal Standards

About IsoSciences

- **Specialists in the isotopically labeled custom synthesis** of APIs and metabolites offering over 1,000 catalog products.
- IsoSciences as an innovator, specializing in the production of isotopically labeled internal standards for mass spec analysis, has been fulfilling the market demands for stable isotope labeled reference compounds, advanced intermediates, final drug substances and metabolites for over 15 years.
- Our team works with diagnostic, nutritional, pharmaceutical and government laboratories around the world to produce the highest quality products available.
- Customers’ needs are met by using advanced processes, stringent quality specifications and specially designed laboratories. We are ISO 9001 certified with extensive quality control and analytical capabilities.

Located outside Philadelphia

4800 sq ft lab facility

Providing over 1000 catalog products with various compounds used in many applications such as:

- Food
- Vitamin
- Steroid
- Hormone
- Diagnostic Testing

Analytical Capabilities

**PURITY**
Determination by HPLC, ELSD or GC

**STRUCTURAL**
Determination by $^1$H and $^{13}$C NMR

**ISOTOPE INCORPORATION**
Determination by LC-MS/MS, LC-MS or GC-MS
Product Categories

**Steroids**
IsoSciences offers over 300 steroids, including the largest selection of $^{13}$C labeled internal standards available on the market today. Products include Cortisol-$^{13}$C$_3$, Aldosterone-d4 and Testosterone-$^{13}$C$_5$.

**Vitamin D**
IsoSciences has demonstrated their expertise in synthesizing Vitamin D metabolites, including 25-Hydroxy, 1,25 and 24, 25-Dihydroxy and 3-EPI Vitamin D, for over 15 years.

**Vitamin K**
Vitamin K deficiency has been linked to numerous disorders. IsoSciences offers various product options for isotopically labeled K1, MK-4, MK-7, MK-9 and K3.

**Food & Vitamin**
As food testing transitions from immunoassay to LC-MS/MS, IsoSciences is the #1 source for isotopically labeled vitamins including a wide selection of B vitamins.

**Catechins**
The health benefits of Green Tea are widely reported. IsoSciences has a wide selection of catechin, epicatechin and their gallates derivatives.

**Bile Acids**
IsoSciences offers multiple isotopically labeled variations of bile acids to allow easy differentiation of isomers. Deuterated products include primary, secondary, conjugated and sulfated bile acids.

**Fatty Acids**
IsoSciences offers numerous fatty acids including DHA, EPA, Oleic and Arachidonic Acid.

**Thyroxine**
Diagnostics labs around the world have been using IsoSciences $^{13}$C labeled T2, T3, rev-T3 and T4 for their quantification.

**Clinical Diagnostic**
As the use of mass spectrometry in clinical chemistry continues to increase, so does IsoSciences's product list. From biogenic amines to drugs, IsoSciences can be your supplier of internal standards.

**Immunosuppressant**
LC-MS/MS detection of these complex molecules has been increasing over the past 10 years. IsoSciences offers many products such as deuterated cyclosporin, rapamycin and tacrolimus.

**Synthetic Intermediates**
IsoSciences has been expanding their library of isotopically labelled building blocks for over 15 years.

**Environmental**
IsoSciences has synthesized numerous internal standards for use in agriculture and pollution detection by LC-MS/MS and GC-MS/MS.

**Caffeine Metabolites**
IsoSciences has developed an extensive product line of $^{13}$C and $^{15}$N labeled substituted uric acids and xanthines.

**Toxicology**
New! IsoSciences recently launched its toxicology product line. These compounds are labeled with $^{13}$C and $^{15}$N allowing for the most accurate quantification.

**Newborn Screening**
IsoSciences offers exact concentration of ready to use solutions of isotopically labeled amino acids, carboxylic acids, carnitines, steroids and vitamin D metabolites.

**E-Cigarettes**
E-cigarette usage is on the rise and so is its analysis. IsoSciences offers a wide selection of flavors and fragrances.
Industry Applications

- Clinical and diagnostic labs utilizing mass specs for quantification and analysis
- Researching purity and impurity profiles in drugs
- R & D in pharmaceutical industries
- Standards for environmental analysis
- Clinical research

MARKET TRENDS

The use of LC-MS/MS in both the clinical and food testing labs is expanding and the need for isotopically labeled internal standards is more important than ever.

COMPETITIVE ADVANTAGES

1. INCREASED TESTING ACCURACY:
When shifting to $^{13}$C and $^{15}$N isotopes, customers are assured a superior internal standard that co-elutes with the analyte. The isotopes are placed in non-exchangeable positions and in desired molecular fragments to ensure the internal standard allows for accurate measurements.

2. CORRECTS FOR SAMPLE VARIATION:
Why co-elute? An internal standard is used to correct for injection to injection variation. The internal standard is unable to correct for ion suppression and matrix effects without co-elution.

3. COMPLETE CERTIFICATE OF ANALYSIS:
A complete Certificate of Analysis is issued with every compound. This includes structural identity by $^1$H-NMR and $^{13}$C-NMR, purity assessment by HPLC-UV, GC-FID or HPLC-ELSD and isotope incorporation by LC-MS or GC-MS.

4. HIGH PURITY:
IsoSciences compounds routinely analyze over 98% pure and 98% isotope incorporation with no unlabeled material detected.
Frequently Asked Questions

Q  Do I need an internal standard?
A  If the lab is running mass spec for quantification (when obtaining a patient value) internal standards are needed to provide confidence in the result.

Q  What is the difference between $^{13}$C, $^{15}$N and deuterated internal standards?
A  $^{13}$C and $^{15}$N labeled internal standards allow for more confidence in the results as they can act as a true internal standard. Deuterated internal standards could perform equally as well; however, additional testing must be performed to ensure co-elution and that no loss of deuterium occurs.

Q  Are these internal standards suitable for LC-MS/MS?
A  Analogs and deuterated internal standards have been used and methods have been validated; however, the proper tests may not have been performed. $^{13}$C and $^{15}$N labeled internal standards enables the labs to ensure increased accuracy without additional testing (co-elution, ion suppression and loss of deuterium).

Q  Why are these more expensive than my deuterated internal standards?
A  Lower priced internal standards are easier to synthesize. The unlabeled analyte is dissolved in deuterated solvent with base, stirred overnight and dried. This same simple process that occurs in synthetic lab can also occur in reverse. IsoSciences’ internal standards are prepared synthetically for a more stable internal standard.

Q  We are currently using a different internal standard, why switch?
A  Is the current assay having any performance problems? Does the internal standard co-elute? (If not, then it isn’t correcting for ion suppression/matrix effect.). Has the stability of the deuterium on the internal standard been tested? (Likely not)

Q  We already have a method and it is validated.
A  Implementing a change to an internal standard for most labs requires a re-validation run to ensure the new internal standard properly performs in the assay. Utilizing a superior internal standard can correct for ion suppression / matrix effect allowing the lab to have more accuracy in their test results.