

MERCK, SHARP & DOHME/ISOTOPES is the leading supplier of stable isotope-labelled compounds to the international scientific community. All products are made in Canada. Operating from laboratories and offices in Montreal, the division has responded to changing research needs for almost thirty years; it now makes available several thousand compounds that have been synthesized and offers the most experienced custom synthesis service available anywhere.

The primary stable (non-radioactive) isotopes utilized are deuterium, carbon-13 and nitrogen-15; others of lesser importance are carbon-12, and oxygen-17 & 18. Wherever available, Canadian isotope raw materials are utilized.

Deuterated NMR solvents from MSD Isotopes are the acknowledged world standard in quality. They are intended for use with the most demanding high-field instrumentation available. The solvents are subject to rigorous quality control procedures including proton FT NMR throughout manufacturing and packaging. All products are available in glass ampoules for added protection of product integrity.

Other available products cover the widest range of compound types of all stable isotope applications. Compound types include carbohydrates, fatty acids, amino acids, inorganic gases, liquid crystals, pollutants, organometallics, biogenic amines, alcohols and phenols. Many have been prepared with a variety of isotope labels.

Stable-labelled compounds are used primarily for studies involving NMR or mass spectroscopy as analytical methods but other techniques including ESR, IR, microwave and UV-VIS spectroscopies can also be used. As examples, NMR studies have been carried out on deuterated liquid crystals, carbon-13 labelled proteins synthesized from specific carbon-13 labelled amino

acids, nitrogen-15 labelled nucleic acids and oxygen-17 labelled aldehydes and ketones. Studies range from small scale biosyntheses using simple labelled substrates to whole-body NMR and TMR imaging using significant quantities of carbon-13 labelled sugars. Some examples of MS studies include the use of stable labelled compounds as internal standards in the quantification of organic pollutants in water and hazardous wastes and in the quantification of biogenic amines and pharmaceuticals in biological fluids and tissues. Carbon-13 and nitrogen-15 labelled amino acids have been fed to children and pregnant women with MS methodology being used to determine their utilization and turnover times. Similarly, fat malabsorption in children has been clinically determined using carbon-13 labelled triglycerides. Bioavailability studies using concurrent administration of unlabelled and stable-labelled drugs have been shown to decrease significantly the errors in such determination relative to studies using radioisotopes. A second stable labelled form of the drug is used as the internal standard for the quantification of the two administered forms.

STABLE ISOTOPE-LABELLED COMPOUNDS

Deuterium
Carbon-13
Nitrogen-15
and other

Custom Synthesis

NMR Solvents

Alcohols and Phenols	Hydrocarbons —
Algal Products	Alicyclic
Aldehydes	Hydrocarbons —
Amides	Aliphatic
Amines	Hydrocarbons —
Amino Acids	Aromatic
Biogenic Amines: Field of Interest	Inorganic Compounds
Carbohydrates	Ketones
Carboxylic Acids,	Liquid Crystals
Anhydrides and Salts	Nitriles
Deuterides	Nitro and Nitroso Compounds
Diazo and Azoxy Compounds	Nucleic Acid Bases and Nucleosides
Drugs (Therapeutic)	Organometallic Compounds
Esters	Priority Pollutants
Ethers and Oxides	Prostaglandins
Fatty Acids	Spin Labels
Halides — Acyl and Aroyl	Steroids
Halides — Alkyl and Aryl	Sulphur-containing Compounds
Heterocycles	

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