

Technical Manual (Japanese version) is available at <http://www.dojindo.co.jp/manual/sb05.pdf>

General Information

It has been recognized that hydrogen sulfide (H₂S) has an important role as a physiological active substance for vasodilation, cytoprotection, and modulation of insulin secretion. H₂S is considered as a gaseous molecule such as NO and CO. However, around 80% of the total sulfide exists as hydrogen sulfide anion (HS⁻) under physiological condition, since the pK_a is about 7 (Fig. 1). Stable isotope Na₂S(34) solution is a hydrogen sulfide donor consisted of stable isotope sulfur (³⁴S). Since the mass number is different [+2] from that of naturally-occurring sulfur (³²S), it is possible to trace the sulfur atom of hydrogen sulfide *in vivo* by mass spectrometry (MS) analysis. Stable isotope Na₂S(34) solution is a useful tool for research of hydrogen sulfide.

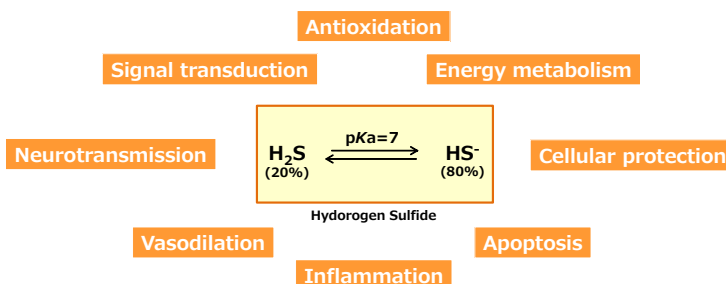


Fig. 1 Physiological functions of hydrogen sulfide

Contents

-SulfoBiotics- Stable isotope Na₂S(34) solution: 20 mmol/l Na₂S(34) (0.3 mol/l NaOH) 500 μl

Storage Condition

Store at -20 °C

Precaution

- * Handle carefully with the alkaline solution.
- * Do not repeat freeze-thaw. Aliquot the solution and store at -20°C as necessary.

General Protocol

Dilute Stable isotope Na₂S(34) solution more than 100 times with an appropriate buffer such as PBS or HEPES buffer in biological experiments.

- * When 10 μl of Stable isotope Na₂S(34) solution is diluted with 990 μl of PBS, 200 μmol/l of Na₂S(34) solution will be prepared.
- * The buffer concentration should be more than 10 mmol/l.
- * Purge the buffer with nitrogen gas for 30 minutes or more to prevent oxidations.
- * Use the diluted solution as soon as prepared. The solution is not stable enough to store.

- MS analysis by Monobromobimane method-

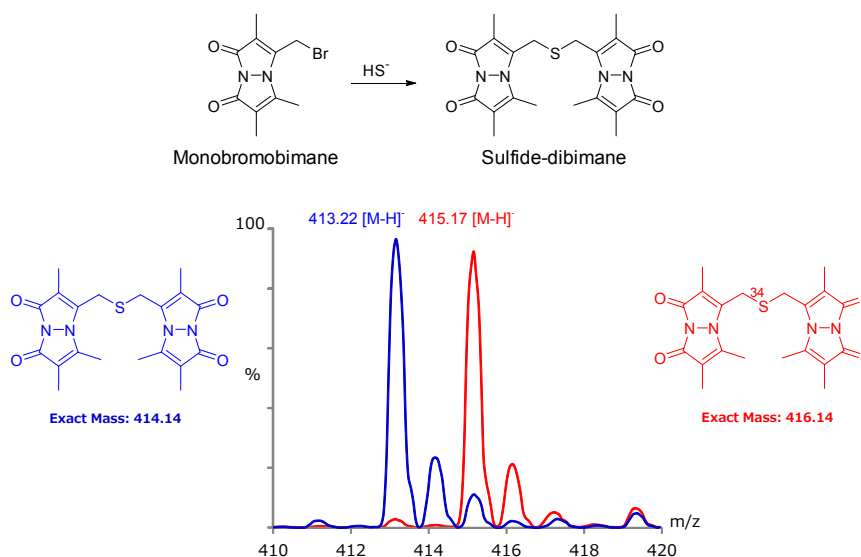


Fig. 2 MS spectra of Sulfide-dibimane

Electrospray ionization (ESI)-Mass (Waters)
Single quadrupole mass detector (Negative mode)

References

- 1) M. Nishida, *et al.*, "Hydrogen sulfide anion regulates redox signaling via electrophile sulfhydrylation", *Nat. Chem. Biol.*, **2012**, *8*, 714.
- 2) X. Shen, S. Chakraborty, T. R. Dugas, and C. G. Kevil, "Hydrogen sulfide measurement using sulfide dibimane: critical evaluation with electropray ionb trap mass spectrometry", *Nitric Oxide*, **2014**, *41*, 97.

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