It has been recognized that hydrogen sulfide (H\textsubscript{2}S) has an important role as a physiological active substance for vasodilation, cytoprotection, modulation of insulin secretion. Although H\textsubscript{2}S is considered as a gaseous molecule such as NO and CO, about 80% of the total sulfide exists as hydrogen sulfide anion (HS\textsuperscript{-}) under physiological condition. In addition, H\textsubscript{2}S easily converts to various biochemical molecules such as persulfides and polysulfides, which react with sulfhydryl moieties in a living body. Therefore, the precise action mechanism of H\textsubscript{2}S has not been cleared.

Sodium sulfide (Na\textsubscript{2}S) and sodium hydrogen sulfide (NaHS) have been widely used as a H\textsubscript{2}S donor. Only instantaneously release of H\textsubscript{2}S from Na\textsubscript{2}S and NaHS, however, is available in aqueous solution, and these reagents give a transient stimulation of H\textsubscript{2}S.

GYY4137 is a slow-releasing hydrogen sulfide donor developed by P. K. Moore \textsuperscript{1}). Since GYY4137 is water-soluble and continuously releases H\textsubscript{2}S by hydrolysis in a neutral aqueous solution, it is reported that GYY4137 shows distinct cellular effects such as anti-hypertensive, anti-atherosclerotic, and anti-tumor activities \textsuperscript{2-5)}.

**General Protocol**

1) Dissolve 3.8 mg of GYY4137 with 0.5 ml of ddH\textsubscript{2}O to prepare 20 mmol/l GYY4137 Stock Solution.
*Store the stock solution at -20 °C and use within two months. Aliquot the solution for longer storage.

2) Dilute the 20 mmol/l GYY4137 Stock Solution to an appropriate concentration depending on your experiment.
*H\textsubscript{2}S release is initiated by addition of the stock solution to neutral buffers or culture medium.

**Experimental Example**

- **H\textsubscript{2}S release profile of GYY4137 in PBS -**

1) Ten microliter (10 μl) of 20 mmol/l GYY4137 Stock Solution was added to 2 ml of PBS to prepare 100 μmol/l GYY4137 (PBS) solution. Then, the solution was incubated at room temperature with sealing.

2) The yielded hydrogen sulfide anion was quantified at each time by methylene blue method.

H\textsubscript{2}S release from GYY4137 in PBS was slow and sustained.

![Fig. 2 H\textsubscript{2}S release profile of 100 μmol/l GYY4137 in PBS](image)

**Reference**


If you need more information, please contact Dojindo technical service.