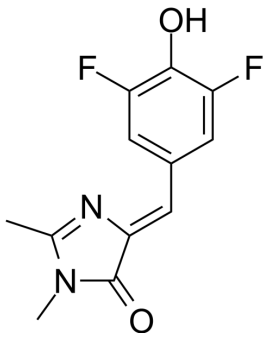
DFHBI

Cat. No.:	HY-110250
CAS No.:	1241390-29-3
Molecular Formula:	$C_{12}H_{10}F_2N_2O_2$
Molecular Weight:	252.22
Target:	Fluorescent Dye
Pathway:	Others
Storage:	4°C, protect from light * In solvent : -80°C, 1 years; -20°C, 6 months (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 83.33 mg/mL (330.39 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.9648 mL	19.8240 mL	39.6479 mL
5 mM	0.7930 mL	3.9648 mL	7.9296 mL
10 mM	0.3965 mL	1.9824 mL	3.9648 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 1.43 mg/mL (5.67 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 1.43 mg/mL (5.67 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 1.43 mg/mL (5.67 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

DFHBI is a small molecule that resembles the chromophore of green fluorescent protein (GFP). Spinach and DFHBI are essentially nonfluorescent when unbound, whereas the Spinach-DFHBI complex is brightly fluorescent both in vitro and in living cells.

In Vitro

These RNAs interact with DFHBI to produce a bluish-green fluorescence emission (501 nm) after excitation at 447 nm. Spinach and Spinach2 are RNA aptamers that can be used for the genetic encoding of fluorescent RNA. Spinach2 binds and activates the fluorescence of DFHBI, allowing the dynamic localizations of Spinach2-tagged RNAs to be imaged in live cells. The spectral properties of Spinach2 are limited by DFHBI, which produces fluorescence that is bluish-green and is not

optimized for filters commonly used in fluorescence microscopes. Spinach and Spinach2 bind to DFHBI have fluorescence excitation maxima of 447 nm and peak fluorescence emission of 501 nm[1].
Broccoli-tagged RNAs are selectively detected in total cellular RNA by gel electrophoresis followed by staining of gels with DFHBI, the Broccoli-binding fluorophore. Spinach is a 98-nt-long RNA aptamer that binds to and switches on the fluorescence of DFHBI. Both Spinach and DFHBI are essentially nonfluorescent when unbound, whereas the Spinach-DFHBI complex is brightly fluorescent both in vitro and in living cells. DFHBI should be shielded from light. All stock solutions of DFHBI should be maintained in dark tubes or wrapped in foil. Plates containing cultures incubated with DFHBI should be kept in the dark by using a foil overwrap[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Nano Lett. 2022 Jan 26;22(2):716-725.
- Sens Actuators B Chem. 2024 Feb 20, 135521.
- Anal Chem. 2023 Sep 3.
- Anal Chim Acta. 1 June 2022, 340028.
- Anal Chim Acta. 2022 May 29;1209:339816.

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REFERENCES

[1]. Song W, et al. Plug-and-play fluorophores extend the spectral properties of Spinach. J Am Chem Soc. 2014 Jan 29;136(4):1198-201.

[2]. Strack RL, et al. Using Spinach-based sensors for fluorescence imaging of intracellular metabolites and proteins in living bacteria. Nat Protoc. 2014 Jan;9(1):146-55.

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