Product Datasheet

Diphenylterazine

Catalog No. **BP-02205** · CAS **344940-63-2** · Form **free base** · Physical state **solid** · Color **Orange to reddish brown** · Version **1.0** · Revision **2026-09-07**

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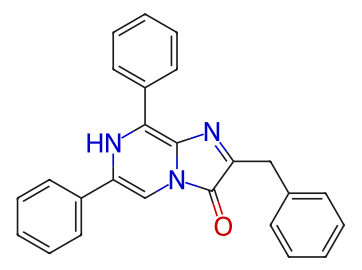
Target	Research area
Fluorescent Dye	**Cancer**

Molecular formula	$C_{25}H_{19}N_3O$
Molecular weight	**377.4379**

STRUCTURE



DESCRIPTION

Diphenylterazine (DTZ) is a bioluminescence agent. Diphenylterazine alone yielded very little background, leading to excellent signal-to-background ratios[1].

BIOLOGICAL ACTIVITY

n Vitro
Diphenylterazine elicits minimal cell toxicity at millimolar concentrations.

Diphenylterazine (DTZ) has high quantum yield, red-shifted emission, favorable in vivo pharmacokinetics and lacks cofactors required for light emission. Yeh AH (2023) used Diphenylterazine (DTZ) as the target substrate of luciferase, and the multinuclear transport factor NTF2-like superfamily as the target topology, to de novo design a small and stable protein scaffold to make the size and shape of the pocket suitable for Diphenylterazine. This method screens out designed luciferases with high selectivity and overcomes the limitations of natural proteins. The catalytic efficiency of the de novo designed luciferase for Diphenylterazine (kcat/Km = 106/M/s) is comparable to that of natural luciferase, but the substrate specificity is higher.

Notes: To make a stock solution for DTZ (Diphenylterazine), first, a premixture is prepared by dissolving 17.6 mg of L-ascorbic acid (HY-B0166) in 10 mL ethanol and 10 mL 1,2-propanediol; next, 1 mg of Diphenylterazine is dissolved in 88 µL of the premix, resulting in a 30 mM Diphenylterazine stock solution containing 5 mM L-ascorbic acid.

The stock solution should be stable for a few months in -80°C freezers. It may also be aliquoted to 10-20 µL each at -80°C for the convenience of use. We want to note that this new formulation greatly enhances substrate stability, compared to the conventional acidic alcohol solution.

In Vivo

Diphenylterazine injections into untransfected BALB/c mice do not yield any background emission. The bioluminescence resulting from intraperitoneally injected Diphenylterazine displays extended kinetics.

1. Female nude mice were injected subcutaneously with HeLa cells.

2. Diphenylterazine (0.3 μmol (0.113 mg); 100 μL) was injected intravenously on days 1, 3, 5, 7, 14, and 28 after tumor implantation.

3. Approximately 5 minutes later, images were taken using a bioluminescence imaging system.

SOLUBILITY

soluble in H2O/DMF

REFERENCES

[1]. Yeh HW, et al. Red-shifted luciferase-luciferin pairs for enhanced bioluminescence imaging. Nat Methods. 2017 Oct;14(10):971-974.

[2]. Yeh AH, et al. De novo design of luciferases using deep learning. Nature. 2023 Feb;614(7949):774-780.

[3]. Practical Notes for teLuc-DTZ and Antares2-DTZ (updated 07/29/2019).

[4]. Hsien-Wei Yeh, et al. ATP-Independent Bioluminescent Reporter Variants To Improve in Vivo Imaging. ACS Chem Biol. 2019 May 17;14(5):959-965.