

# PRODUCT INFORMATION



## Diquat-d<sub>12</sub> (bromide)

Item No. 26778

**Formal Name:** 6,7-dihydrodipyrido[1,2-a:2',1'-c]pyrazine-5,8-diiium-1,2,3,4,6,6,7,7,9,10,11,12-d<sub>12</sub>, dibromide

**MF:** C<sub>12</sub>D<sub>12</sub>N<sub>2</sub> • 2Br

**FW:** 356.1

**Chemical Purity:** ≥98% (Diquat)

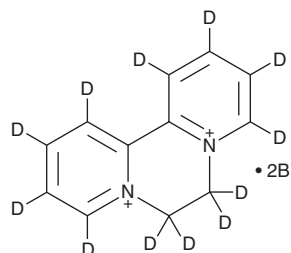
**Deuterium**

**Incorporation:** ≥99% deuterated forms (d<sub>1</sub>-d<sub>12</sub>); ≤1% d<sub>0</sub>

**Supplied as:** A solid

**Storage:** -20°C

**Stability:** ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

Diquat-d<sub>12</sub> (bromide) is intended for use as an internal standard for the quantification of diquat (Item No. 26251) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

Diquat-d<sub>12</sub> (bromide) is supplied as a solid. A stock solution may be made by dissolving the diquat-d<sub>12</sub> (bromide) in the solvent of choice, which should be purged with an inert gas. Diquat-d<sub>12</sub> (bromide) is soluble in the organic solvent DMSO, at a concentration of approximately 1 mg/ml. Diquat-d<sub>12</sub> (bromide) is also slightly soluble in ethanol.

### Description

Diquat is a bipyridylum herbicide that, as a stable radical, acts as an electron acceptor in the electron transport chain and is reoxidized by molecular oxygen, producing reactive oxygen species (ROS).<sup>1</sup> Diquat administration has been used to induce oxidative stress *in vitro* and in animal models.<sup>2-4</sup> It increases the production of ROS and decreases the mitochondrial membrane potential in mitochondria isolated from porcine intestine leading to mitophagy when administered at a dose of 100 mg/kg.<sup>2</sup> Formulations containing diquat have been used in agriculture for crop desiccation and defoliation.

### References

1. Moreland, D.E. Mechanisms of action of herbicides. *Ann. Rev. Plant Physiol.* **31**, 597-638 (1980).
2. Cao, S., Wu, H., Wang, C., *et al.* Diquat-induced oxidative stress increases intestinal permeability, impairs mitochondrial function, and triggers mitophagy in piglets. *J. Anim. Sci.* **96**(5), 1795-1805 (2018).
3. Singh, P., Hanson, P.S., and Morris, C.M. Sirtuin-2 protects neural cells from oxidative stress and is elevated in neurodegeneration. *Parkinsons Dis.* **2017:2643587** (2017).
4. Tomášek, O., Gabrielová, B., Kačer, P., *et al.* Opposing effects of oxidative challenge and carotenoids on antioxidant status and condition-dependent sexual signalling. *Sci. Rep.* **6:23546** (2016).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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