

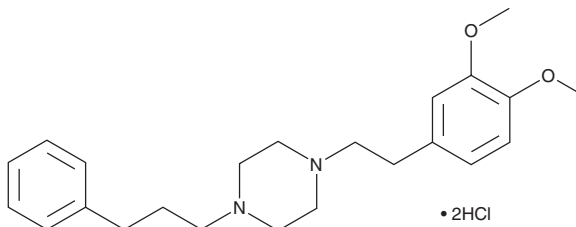
# PRODUCT INFORMATION



## SA 4503

Item No. 26241

**CAS Registry No.:** 165377-44-6  
**Formal Name:** 1-[2-(3,4-dimethoxyphenyl)ethyl]-4-(3-phenylpropyl)piperazine, dihydrochloride  
**Synonyms:** AGY 94806, Cutamesine  
**MF:** C<sub>23</sub>H<sub>32</sub>N<sub>2</sub>O<sub>2</sub> • 2HCl  
**FW:** 441.4  
**Purity:** ≥98%  
**Supplied as:** A crystalline 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

SA 4503 is supplied as a crystalline solid. Aqueous solutions of SA 4503 can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of SA 4503 in PBS, pH 7.2, is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

SA 4503 is a sigma-1 ( $\sigma_1$ ) receptor agonist that is selective for  $\sigma_1$  over  $\sigma_2$  receptors in a radioligand binding assay using guinea pig brain homogenates ( $K_i$ s = 4.6 and 63 nM, respectively).<sup>1,2</sup> SA 4503 (10  $\mu$ M) reduces light-induced cell death, decreases in  $\sigma_1$  expression, disruption of the mitochondrial membrane potential, and activation of caspase-3/7 in murine 661W cells, effects that are blocked by the  $\sigma_1$  receptor antagonist BD 1047 (Item No. 22928).<sup>2</sup> *In vivo*, SA 4503 (10 mg/kg) increases extracellular acetylcholine concentrations in the frontal cortex and improves step-through latency in a passive avoidance test in rats with scopolamine-induced memory impairment.<sup>3</sup> SA 4503 reduces working and reference memory errors induced by a time delay and MK-801 (Item No. 10009019) in a radial arm maze in rats when administered at a dose of 0.3 mg/kg, effects which are ameliorated by the  $\sigma_1$  antagonist NE-100 (Item No. 19642).<sup>4</sup> Pre-administration of SA 4503 (500  $\mu$ M) into the intravitreal space reduces light-induced thinning of the mouse retina outer nuclear layer by approximately 50%.<sup>2</sup>

### References

1. Lever, J.R., Gustafson, J.L., Zu, R., *et al.*  $\sigma_1$  and  $\sigma_2$  receptor binding affinity and selectivity of SA4503 and fluoroethyl SA4503. *Synapse* **59(6)**, 350-358 (2006).
2. Shimazawa, M., Sugitani, S., Inoue, Y., *et al.* Effect of a sigma-1 receptor agonist, cutamesine dihydrochloride (SA4503), on photoreceptor cell death against light-induced damage. *Exp. Eye. Res.* **132**, 64-72 (2015).
3. Matsuno, K., Senda, T., Kobayashi, T., *et al.* SA4503, a novel cognitive enhancer, with  $\sigma_1$  receptor agonistic properties. *Behav. Brain Res.* **83(1-2)**, 221-224 (1997).
4. Zou, L.-B., Yamada, K., Sasa, M., *et al.* Effects of  $\sigma_1$  receptor agonist SA4503 and neuroactive steroids on performance in a radial arm maze task in rats. *Neuropharmacology* **39(9)**, 1617-1627 (2000).

#### 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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