KB-R7943 is a potent and selective inhibitor of the reversed \( \text{Na}\text{/Ca}^{2+} \) exchanger (NCE or NCX; \( \text{IC}_{50} = 1.2\text{-}2.4 \) \( \mu \text{M} \) in cardiomyocytes, smooth muscle cells, NCX1-transfected fibroblasts\(^1\); \( 0.7\mu \text{M} \) in cultured rat forebrain\(^2\)). KB-R7943 has also been shown to inhibit the mitochondrial \( \text{Ca}^{2+} \) uniporter (MCU) – \( \text{Ki} = 5.5\mu \text{M} \).\(^3\) Recently shown to inhibit complex I in the mitochondrial respiratory chain (IC\(_{50} = 11.4\mu \text{M} \) and block NMDA receptors (IC\(_{50} = 13.4\mu \text{M} \)).\(^4\)

1) Iwamoto et al. (1996), Novel Isothioures Derivative Selectively Inhibits the Reverse Mode of Na+/Ca2+ Exchange in Cells Expressing NCX1. J.Biol.Chem., 271 22391
2) Hoyt et al. (1998) Reverse Na+/Ca2+ exchange contributes to glutamate-induced intracellular Ca2+ concentration increases in cultured rat forebrain neurons, Mol.Pharmacol. 53 742
3) Santo-Domingo et al. (2007) The plasma membrane Na+/Ca2+ exchange inhibitor KB-R7943 is also a potent inhibitor of the mitochondrial Ca\textsuperscript{2+} uniporter. Br.J.Pharmacol. 151 647
4) Brustovetsky et al. (2011) KB-R7943, an inhibitor of the reverse Na+/Ca2+ exchanger, blocks N-methyl-D-aspartate receptor and inhibits mitochondrial complex I. Br.J.Pharmacol. 162 255

**PHYSICAL DATA**

Molecular Weight: \( 427.49 \)
Molecular Formula: \( \text{C}_{16}\text{H}_{17}\text{N}_{3}\text{O}_{3}\text{S} \cdot \text{CH}_{3}\text{SO}_{3}\text{H} \)
Purity: >98% by TLC (10% Methanol/methylene chloride + 0.1% NH\(_4\)OH; Rf = 0.40)
NMR: Conforms
Solubility: DMSO (up to 50 mg/ml)
Physical Description: Tan solid
Storage and Stability: Store as supplied at room temperature for up to 2 years from the date of purchase. Protect from exposure to moisture. Solutions in DMSO may be stored at \(-20^\circ\text{C}\) for up to 3 months.

Materials provided by Focus Biomolecules are for laboratory research use only and are not intended for human or veterinary applications.

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