

## Ruthenium red

Cat. No.:	HY-103311		
CAS No.:	11103-72-3		
Target:	Calcium Channel		
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling		
Storage:	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month

## Ruthenium red

### SOLVENT & SOLUBILITY

In Vitro	DMSO : 10 mg/mL (Need ultrasonic) H <sub>2</sub> O : < 0.1 mg/mL (ultrasonic) (insoluble)
In Vivo	1. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: 1 mg/mL (Infinity mM); Clear solution; Need ultrasonic

### BIOLOGICAL ACTIVITY

Description	Ruthenium red (Ammoniated ruthenium oxychloride) is a polycationic dye widely used for electron microscopy (EM) of cells, tissues and vegetative bacteria. Ruthenium red strongly reacts with phospholipids and fatty acids and binds to acidic mucopolysaccharides. Ruthenium red is a L-type calcium current ( $I_{Ca}$ ) blocker <sup>[1][2]</sup> .
IC <sub>50</sub> & Target	$I_{Ca}$ <sup>[2]</sup>
In Vitro	Ruthenium red staining of intracellular organelles and structures seemed to depend on the time of exposure to this agent, as well on the concentration used <sup>[2]</sup> . Ruthenium red efficiently blocks the L-type calcium current in a dose-dependent manner in in guinea-pig isolated ventricular heart cells, with EC <sub>50</sub> of 0.8 μM <sup>[2]</sup> . Ruthenium red (10 μM) blocks the sarcoplasmic Ca release channels or the mitochondrial Ca uptake, and blocks 26.7 % of the sodium current, and slows its inactivation time-course in guinea-pig isolated ventricular heart cells <sup>[2]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.

### CUSTOMER VALIDATION

- Biomed Res Int. 2021 May 15.

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## REFERENCES

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- [1]. Lashanda N Waller, et al. Ruthenium red staining for ultrastructural visualization of a glycoprotein layer surrounding the spore of *Bacillus anthracis* and *Bacillus subtilis*. *J Microbiol Methods*. 2004 Jul;58(1):23-30.
- [2]. Claire O Malécot, et al. Ruthenium red as an effective blocker of calcium and sodium currents in guinea-pig isolated ventricular heart cells. *Br J Pharmacol*. 1998 Jun; 124(3): 465-472.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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