**Tat-NR2B9c**

**Cat. No.:** HY-P0117  
**CAS No.:** 500992-11-0  
**Molecular Formula:** C₁₀₅H₁₈₈N₄₂O₃₀  
**Molecular Weight:** 2518.88  
**Sequence:** Tyr-Gly-Arg-Lys-Arg-Arg-Gln-Arg-Arg-Lys-Leu-Ser-Ser-Ile-Glu-Ser-Asp-Val  
**Sequence Shortening:** YGRKKRRQRRRLSSIESDV

**Target:** iGluR; NO Synthase  
**Pathway:** Membrane Transporter/Ion Channel; Neuronal Signaling; Immunology/Inflammation

**Storage:**  
- **Powder**  
  -80°C: 2 years  
  -20°C: 1 year  
- **In solvent**  
  -80°C: 6 months  
  -20°C: 1 month

### SOLVENT & SOLUBILITY

**In Vitro**  
H₂O : ≥ 50 mg/mL (19.85 mM)  
*“≥” means soluble, but saturation unknown.*

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 mM</td>
<td>0.3970 mL</td>
<td>1.9850 mL</td>
<td>3.9700 mL</td>
</tr>
<tr>
<td></td>
<td>5 mM</td>
<td>0.0794 mL</td>
<td>0.3970 mL</td>
<td>0.7940 mL</td>
</tr>
<tr>
<td></td>
<td>10 mM</td>
<td>0.0397 mL</td>
<td>0.1985 mL</td>
<td>0.3970 mL</td>
</tr>
</tbody>
</table>

Please refer to the solubility information to select the appropriate solvent.

**In Vivo**  
1. Tat-NR2B9c is prepared in saline[^4].

### BIOLOGICAL ACTIVITY

**Description**  
Tat-NR2B9c (Tat-NR2Bct; NA-1) is a postsynaptic density-95 (PSD-95) inhibitor, with EC₅₀ values of 6.7 nM and 670 nM for PSD-95d2 (PSD-95 PDZ domain 2) and PSD-95d1, respectively. Tat-NR2B9c disrupts the PSD-95/NMDAR interaction, inhibiting NR2A and NR2B binding to PSD-95 with IC₅₀ values of 0.5 μM and 8 μM, respectively. Tat-NR2B9c also inhibits neuronal nitric oxide synthase (nNOS)/PSD-95 interaction, and possesses neuroprotective efficacy[^1][^2][^5].
IC₅₀ & Target

<table>
<thead>
<tr>
<th>EC₅₀</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.7 nM</td>
<td>(PSD-95d2), 670 nM (PSD-95d1)</td>
</tr>
</tbody>
</table>

NO synthase

In Vitro

Tat-NR2B9c is a PSD-95 inhibitor, with an EC₅₀ of 6.7 nM for PSD-95d2, representing a >100-fold higher affinity for this domain than for PSD-95d1 (EC₅₀, 0.67 μM). Tat-NR2B9c inhibits NMDAR2A, NMDAR2B, and NMDAR2C binding to PSD-95, with IC₅₀s of 0.5 μM, -8 μM, and 0.75 μM, respectively.

Tat-NR2B9c also blocks the interaction between PSD-95 and nNOS with an IC₅₀ of -0.2 μM. Tat-NR2B9c reduces association of PSD-95 with GluN2B by -50% in the YAC128 striatum, decreases NMDA-induced p38 activation in YAC128 striatal tissue, but shows no effect on the NMDA-induced JNK activation.

In Vivo

Tat-NR2B9c (10 nmol/g, i.v.) reduces infarction volume of male C57BL/6 mice, but has no effect at 3 nM/g.

PROTOCOL

Cell Assay

Postnatal mono-cultured WT and YAC128 striatal neurons (DIV 9, due to the viability of these mono-cultured MSNs) are pretreated for 1 h with 200 nM Tat-NR2B9c, and/or SB-239063 (p38 inhibitor), and/or SP-600125 (JNK inhibitor), then incubated with or without 500 μM NMDA for 10 min. After NMDA treatment, striatal neurons are washed once with warm plating medium (PM) and then incubated in conditioned PM (without Tat peptides or p38, JNK inhibitors) for 24 h. Then cells are washed with PBS once and fixed with 4% paraformaldehyde (PFA) for 30 min.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Administration

Mice

In each study mice are randomly allocated to three treatment groups (0.0, 3.0, 10.0 nMole/g Tat-NR2B9c) or to sham treatment. The individual performing the experimental procedures, administering treatments and performing the analyses is blinded to the treatment assignments. Tat-NR2B9c is prepared at the indicated doses and administered intravenously via the tail vein using a pump in a volume of 1 μL/g over 5 min beginning at reperfusion.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

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REFERENCES

