**Supplemental 1 Table. Postsynaptic neuron parameters.**

|  |  |  |  |
| --- | --- | --- | --- |
| variable | Description | Value (units) | source |
| *Rm* | Actual resistance of the spine head |  | [48] |
|  | Postsynaptic resting membrane potential | 70- mV | [48] |
|  | Postsynaptic membrane time constant | 50 ms | [48] |
|  | AMPAR conductance before NO production | 0.35 nS | [49] |
|  | AMPAR reversal potential | 0 mV | [49] |
|  | AMPAR forward rate constant | 1.1 | [49] |
|  | AMPAR backward rate constant |  | [49] |
|  | NMDAR reversal potential | 0 mV | [49] |
|  | Faraday’s constant |  | [53] |
|  | Real gas constant | 8.314 J/K | [53] |
|  | Absolute temperature | 293.15 K | [53] |
|  | Valence of | 2 | [53] |
|  | Relative electrical distance of the binding site of  from the outside of the membrane | 0.8 | [53] |
|  | at 0 mV | 4.1 mM | [53] |
|  | Concentration of in the extracellular fluid | 1 mM | [53] |
|  | Constant value | 0.28 | Proposed model |
|  | Constant value | 0.05 | Proposed model |
|  | NMDAR forward rate constant |  | [49] |
|  | NMDAR backward rate constant | 6.6 | [49] |
|  | Steepness of speed of Voltage-dependent gating of channel | 0.007 | [53] |
|  | The at which  is equal to zero | 100- mV | [53] |
|  | Time constant which determines the speed of Voltage-dependent gating of channel | 0.05 ms | [53] |