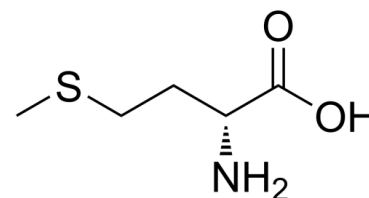


## Data Sheet

<b>Product Name:</b>	Methionine
<b>Cat. No.:</b>	CS-7880
<b>CAS No.:</b>	348-67-4
<b>Molecular Formula:</b>	C <sub>5</sub> H <sub>11</sub> NO <sub>2</sub> S
<b>Molecular Weight:</b>	149.22
<b>Target:</b>	Endogenous Metabolite; GABA Receptor
<b>Pathway:</b>	Membrane Transporter/Ion Channel; Metabolic Enzyme/Protease; Neuronal Signaling
<b>Solubility:</b>	H <sub>2</sub> O : 25 mg/mL (ultrasonic)



### BIOLOGICAL ACTIVITY:

Methionine (MRX-1024; D-Methionine) is an effective chemoprotective agent which can also inhibit the neuronal activity through **GABA<sub>A</sub>** receptor activation. IC<sub>50</sub> & Target: GABA<sub>A</sub> receptor<sup>[1]</sup> *In Vitro*: The incubation of human plasma with Methionine (D-methionine) and CP leads to the formation of a Pt-D-methionine complex independent of the order of addition. In plasma, an early CP hydrolysis product reacts with Methionine to form a 1:1 complex that is followed by the formation of a 2:1 compound at a later time point. The formation of these Pt-D-methionine species plays an important role in the processes by which Methionine protects mammalian organisms against CP-induced toxicities<sup>[2]</sup>. *In Vivo*: When Methionine (D-methionine) is administered along with cisplatin the cell density is 0.8±0.070 (SEM), significantly larger than in rats treated with only cisplatin (P<0.01) while not significantly different from controls or from animals treated only with D-methionine (P>0.05). When Methionine is administered alone the average cell density is 0.95±0.099 (SEM) and not significantly different from controls (P>0.05)<sup>[3]</sup>.

### PROTOCOL (Extracted from published papers and Only for reference)

**Cell Assay:** <sup>[2]</sup>Plasma (2.0 mL) is spiked with 81 mL of the CP stock solution, incubated at 37°C for 30 min and then 20 mL of the Methionine (D-methionine) stock solution (40.7 mg/mL) is added. The obtained mixture is analyzed after 10 min and 50 min of incubation at 37°C<sup>[2]</sup>. **Animal Administration:** <sup>[3]</sup>Three sham controls receive 0.9% saline instead of cisplatin. Three rats receive only cisplatin. Another three rats receive Methionine (D-methionine) 30 minutes prior to treatment with cisplatin. Injection of Methionine prior to cisplatin treatment ensures that it is already taken up before cisplatin is applied. Finally, three rats are treated only with Methionine. All 12 rats are sacrificed at day 7 post-treatment. For prescreening, two further rats are treated with cisplatin alone and sacrificed 2 or 21 days later. All rats are hydrated with 0.9% saline<sup>[3]</sup>.

### References:

- [1]. Wu C, et al. Antioxidants L-carnitine and D-methionine modulate neuronal activity through GABAergic inhibition. J Neural Transm (Vienna). 2014 Jul;121(7):683-93.
- [2]. Sooriyaarachchi M, et al. Chemoprotection by D-methionine against cisplatin-induced side-effects: insight from in vitro studies using human plasma. Metallomics. 2014 Mar;6(3):532-41.
- [3]. Hinduja S, et al. D-methionine protects against cisplatin-induced neurotoxicity in the hippocampus of the adult rat. Neurotox Res. 2015 Apr;27(3):199-204.

**CAIndexNames:**

D-Methionine

**SMILES:**

N[C@H](CCSC)C(O)=O

**Caution: Product has not been fully validated for medical applications. For research use only.**

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