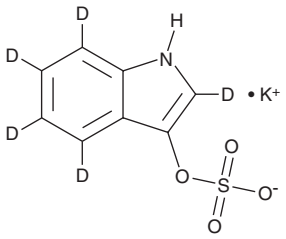
# PRODUCT INFORMATION

## Indoxyl Sulfate-$d_5$

*Item No. 34511*

**CAS Registry No.:** 1644451-34-2
**Formal Name:** 1H-indol-3-yl-2,4,5,6,7-$d_5$ sulfate, potassium salt
**MF:** $C_8HD_5NO_4S \bullet K$
**FW:** 256.3
**Chemical Purity:** ≥95% (Indoxyl sulfate)
**Deuterium Incorporation:** ≥99% deuterated forms ($d_1$-$d_5$); ≤1% $d_0$
**Supplied as:** A solid
**Storage:** -20°C
**Stability:** ≥4 years



*Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.*

### Laboratory Procedures

Indoxyl sulfate-$d_5$ is intended for use as an internal standard for the quantification of indoxyl sulfate (Item No. 16926) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

Indoxyl sulfate-$d_5$ is supplied as a solid. A stock solution may be made by dissolving the indoxyl sulfate-$d_5$ in the solvent of choice, which should be purged with an inert gas. Indoxyl sulfate-$d_5$ is slightly soluble in DMSO and methanol.

### Description

Indoxyl sulfate is a uremic toxin and a metabolite of tryptophan (Item No. 29600).[1] It is formed *via* sulfation of indoxyl, an intermediate generated from tryptophan by intestinal bacteria, by the sulfotransferase (SULT) isoform 1A1 variant 2 (SULT1A1*2) in the liver.[1,2] Indoxyl sulfate activates the aryl hydrocarbon receptor (AhR) in HepG2 40/6 hepatoma cells ($EC_{50}$ = 12.1 nM in a reporter assay).[3] It also inhibits the organic anion transporter (OAT) isoforms OAT1 and OAT3 ($K_i$s = 34.2 and 74.4 µM, respectively for the rat transporters) in S2 proximal tubule cells.[4] Indoxyl sulfate (0.2 and 1 mM) increases superoxide anion and nitric oxide levels in isolated human mononuclear blood cells.[5] It increases serum creatinine and blood urea nitrogen (BUN) levels in the 5/6 nephrectomized rat model of chronic renal failure when administered at a dose of 50 mg/kg.[4]

### References


1. Niwa, T. Uremic toxicity of indoxyl sulfate. *Nagoya J. Med. Sci.* **72(1-2)**, 1-11 (2010).
2. Banoglu, E. and King, R.S. Sulfation of indoxyl by human and rat aryl (phenol) sulfotransferases to form indoxyl sulfate. *Eur. J. Drug Metab. Pharmacokinet.* **27(2)**, 135-140 (2002).
3. Schroeder, J.C., Dinatale, B.C., Murray, I.A., *et al.* The uremic toxin 3-indoxyl sulfate is a potent endogenous agonist for the human aryl hydrocarbon receptor. *Biochemistry* **49(2)**, 393-400 (2010).
4. Enomoto, A., Takeda, M., Tojo, A., *et al.* Role of organic anion transporters in the tubular transport of indoxyl sulfate and the induction of its nephrotoxicity. *J. Am. Soc. Nephrol.* **13(7)**, 1711-1720 (2002).
5. Pieniazek, A., Gwozdzinski, L., Hikisz, P., *et al.* Indoxyl sulfate generates free radicals, decreases antioxidant defense, and leads to damage to mononuclear blood cells. *Chem. Res. Toxicol.* **31(9)**, 869-875 (2018).





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