# PRODUCT INFORMATION

## Febuxostat-$d_9$

*Item No. 25033*

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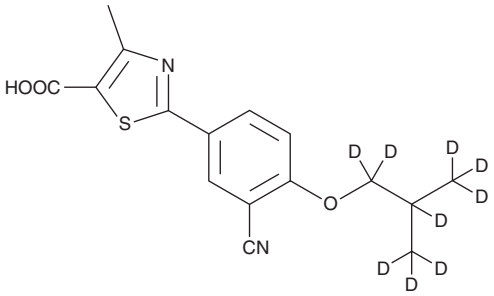
|---|---|
| **CAS Registry No.:** | 1246819-50-0 |
| **Formal Name:** | 2-[3-cyano-4-[2-(methyl-$d_3$)propoxy-1,1,2,3,3,3-$d_6$] phenyl]-4-methyl-5-thiazolecarboxylic acid |
| **MF:** | $C_{16}H_7D_9N_2O_3S$ |
| **FW:** | 325.4 |
| **Chemical Purity:** | ≥98% (Febuxostat) |
| **Deuterium Incorporation:** | ≥99% deuterated forms ($d_1$-$d_9$); ≤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

Febuxostat-$d_9$ is intended for use as an internal standard for the quantification of febuxostat (Item No. 14127) 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).

Febuxostat-$d_9$ is supplied as a solid. A stock solution may be made by dissolving the febuxostat-$d_9$ in the solvent of choice, which should be purged with an inert gas. Febuxostat-$d_9$ is soluble in the organic solvent DMSO at a concentration of approximately 1 mg/ml.

### Description

Febuxostat is an antihyperuricemic nonpurine inhibitor of both the oxidized and reduced forms of xanthine oxidase.[1] It inhibits bovine milk xanthine oxidase as well as mouse and rat liver xanthine oxidase/xanthine dehydrogenase ($IC_{50}$s = 1.4, 1.8, and 2.2 nM, respectively).[2] It is 10-30 times more potent than the hypoxanthine analog allopurinol (Item No. 10012597; $K_i$s = 0.7 nM and 0.7 µM, respectively).[3,4] Febuxostat decreases the serum level of urate in a potassium oxonate rat model of hyperuricemia ($ED_{50}$ = 1.5 mg/kg).[2] It reduces hepatic macrovesicular steatosis in mice fed a high-fat diet containing *trans* fatty acids when administered at a dose of 1 mg/kg per day.[5] Febuxostat (0.75 mg/kg) also increases CNS expression of glutamate oxaloacetate transaminase 2 (GOT2) and improves neurological symptoms in a mouse model of secondary progressive experimental autoimmune encephalomyelitis (EAE).[6] Formulations containing febuxostat have been used in the treatment of symptomatic hyperuricemia in patients with gout.

### References


1. Okamoto, K., Eger, B.T., Nishino, T., *et al. J. Biol. Chem.* **278(3)**, 1848-1855 (2003).
2. Osada, Y., Tsuchimoto, M., Fukushima, H., *et al. Eur. J. Pharmacol.* 241(2-3), 183-188 (1993).
3. Takano, Y., Hase-Aoki, K., Horiuchi, H., *et al. Life Sci.* **76(16)**, 1835-1847 (2005).
4. Bisht, M. and Bist, S.S. *Indian J. Pharm. Sci.* **73(6)**, 597-600 (2011).
5. Nakatsu, Y., Seno, Y., Kushiyama, A., *et al. Am. J. Physiol. Gastrointest. Liver Physiol.* 309(1), G42-G51 (2015).
6. Honorat, J.A., Nakatsuji, Y., Shimizu, M., *et al. PLoS One* **12(11)**, e0187215 (2017).





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