

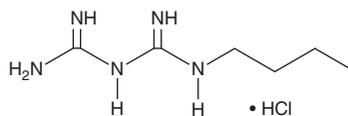
# PRODUCT INFORMATION



## Buformin (hydrochloride)

Item No. 18507

**CAS Registry No.:** 1190-53-0  
**Formal Name:** N-butyl-imidodicarbonimidic diamide, monohydrochloride  
**Synonym:** N-butyl Biguanide  
**MF:** C<sub>6</sub>H<sub>15</sub>N<sub>5</sub> • HCl  
**FW:** 193.7  
**Purity:** ≥95%  
**UV/Vis.:** λ<sub>max</sub>: 235 nm  
**Supplied as:** A crystalline 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

Buformin (hydrochloride) is supplied as a crystalline solid. Aqueous solutions of buformin (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of buformin (hydrochloride) in PBS (pH 7.2) is approximately 1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

Buformin is a biguanide derivative with antihyperglycemic activity. It delays absorption of glucose from the gastrointestinal tract, increases insulin sensitivity and glucose utilization in peripheral cells, and inhibits hepatic gluconeogenesis.<sup>1</sup> It can also deactivate the glycolytic pathway by suppressing glyceraldehyde 3-phosphate dehydrogenase gene expression, which can lead to lactic acidosis.<sup>2</sup> Biguanides, such as buformin, are reported to inhibit the mitochondrial respiratory complex I by inhibiting ubiquinone reduction and by stimulating reactive oxygen species production via the complex I flavin.<sup>3</sup> Some biguanides, including buformin, can also inhibit the mitochondrial ATP synthase.<sup>3</sup> Buformin has also been examined for antitumor activity due to its ability to disrupt the unfolded protein response transcription program during glucose deprivation, which induces cell death in glucose-deprived tumor cells.<sup>4</sup>

### References

1. Miller, R.A., Chu, Q., Xie, J., *et al.* Biguanides suppress hepatic glucagon signalling by decreasing production of cyclic AMP. *Nature* **494(7436)**, 256-260 (2013).
2. Yano, A., Kubota, M., Iguchi, K., *et al.* Buformin suppresses the expression of glyceraldehyde 3-phosphate dehydrogenase. *Biol. Pharm. Bull.* **29(5)**, 1006-1009 (2006).
3. Bridges, H.R., Jones, A.J.Y., Pollak, M.N., *et al.* Effects of metformin and other biguanides on oxidative phosphorylation in mitochondria. *Biochem. J.* **462(3)**, 475-487 (2014).
4. Saito, S., Furuno, A., Sakurai, J., *et al.* Chemical genomics identifies the unfolded protein response as a target for selective cancer cell killing during glucose deprivation. *Cancer Res.* **69(10)**, 4225-4234 (2015).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

#### WARRANTY AND LIMITATION OF REMEDY

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