

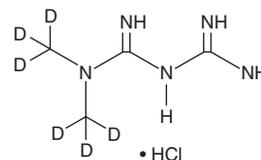
PRODUCT INFORMATION



Metformin-d₆ (hydrochloride)

Item No. 16921

CAS Registry No.: 1185166-01-1
Formal Name: N,N-dimethyl-d₆-imidodicarbonimidic diamide, monohydrochloride
Synonyms: 1,1-Dimethylbiguanide hydrochloride-d₆
MF: C₄H₅D₆N₅ • HCl
FW: 171.6
Chemical Purity: ≥98% Metformin
Deuterium Incorporation: ≥99% deuterated forms (d₁-d₆); ≤1% d₀
UV/Vis.: λ_{max}: 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

Metformin-d₆ (hydrochloride) is intended for use as an internal standard for the quantification of metformin (Item No. 13118) 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).

Metformin-d₆ (hydrochloride) is supplied as a crystalline solid. Metformin-d₆ (hydrochloride) is sparingly soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. For biological experiments, we suggest that organic solvent-free aqueous solutions of metformin-d₆ (hydrochloride) be prepared by directly dissolving the crystalline solid in aqueous buffers.

Description

Metformin is a biguanide with diverse biological activities.¹⁻⁴ Metformin (250 mg/kg, i.p.) increases hepatic AMPK activity and reduces blood glucose by more than 50% in a liver kinase B1-dependent manner in mice fed normal and high-fat diets, respectively, and reduces blood glucose by 40% in *ob/ob* mice.² It reduces weight gain, hepatic lipid droplet content, and total cholesterol, LDL cholesterol, and triglyceride levels in the plasma of diet-induced obese mice when administered at doses of 10 or 50 mg/kg per day.⁴ It also reverses increased hepatic triglyceride and apolipoprotein A5 levels, as well as hepatic steatosis, in a dose-dependent manner in an *ob/ob* mouse model of non-alcoholic fatty liver disease (NAFLD).⁵ Metformin (250 mg/kg) reduces tumor growth in an HCT116 p53^{-/-} human colon cancer mouse xenograft model, but has no effect on HCT116 p53^{-/-} tumors overexpressing recombinant *S. cerevisiae* Ndi1 NADH dehydrogenase, a single-subunit ortholog of the multi-subunit mammalian mitochondrial complex I.³ Formulations containing metformin have been used in the treatment of type 2 diabetes.

References

1. Violette, B., Guigas, B., Garcia, N.S., et al. *Clin. Sci. (Lond)* **122**(6), 253-270 (2012).
2. Shaw, R.J., Lamia, K.A., Vasquez, D., et al. *Science* **310**(5754), 1642-1646 (2005).
3. Wheaton, W.W., Weinberg, S.E., Hamanaka, R.B., et al. *Elife* **3**:e02242, (2014).
4. Kim, E.K., Lee, S.H., Jhun, J.Y., et al. *Mediators Inflamm.* **5813030**, (2016).
5. Lin, M.-J., Dai, W., Scott, M.J., et al. *Oncotarget* **8**(65), 108802-108809 (2017).

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.

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