

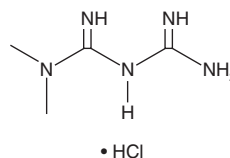
PRODUCT INFORMATION



Metformin (hydrochloride)

Item No. 13118

CAS Registry No.: 1115-70-4
Formal Name: N,N-dimethyl-imidodicarbonimidic diamide, monohydrochloride
Synonyms: 1,1-Dimethylbiguanide hydrochloride
MF: C₄H₁₁N₅ • HCl
FW: 165.6
Purity: ≥98%
UV/Vis.: λ_{max}: 237 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 (hydrochloride) is supplied as a crystalline solid. Aqueous solutions of metformin (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of metformin (hydrochloride) in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

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. Viollet, B., Guigas, B., Garcia, N.S., *et al.* Cellular and molecular mechanisms of metformin: An overview. *Clin. Sci. (Lond)* **122(6)**, 253-270 (2012).
2. Shaw, R.J., Lamia, K.A., Vasquez, D., *et al.* The kinase LKB1 mediates glucose homeostasis in liver and therapeutic effects of metformin. *Science* **310(5754)**, 1642-1646 (2005).
3. Wheaton, W.W., Weinberg, S.E., Hamanaka, R.B., *et al.* Metformin inhibits mitochondrial complex I of cancer cells to reduce tumorigenesis. *Elife* **3:e02242**, (2014).
4. Kim, E.K., Lee, S.H., Jhun, J.Y., *et al.* Metformin prevents fatty liver and improves balance of white/brown adipose in an obesity mouse model by inducing FGF21. *Mediators Inflamm.* **5813030**, (2016).
5. Lin, M.-J., Dai, W., Scott, M.J., *et al.* Metformin improves nonalcoholic fatty liver disease in obese mice via down-regulation of apolipoprotein A5 as part of the AMPK/LXRα signaling pathway. *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.

WARRANTY AND LIMITATION OF REMEDY

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