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:** C$_4$H$_{11}$N$_5$ • HCl

**FW:** 165.6

**Purity:** ≥98%

**UV/Vis.:** $\lambda_{\text{max}}$: 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. 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. 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. 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). 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. Formulations containing metformin have been used in the treatment of type 2 diabetes.

**References**