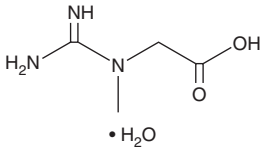
PRODUCT INFORMATION

Creatine (hydrate)

Item No. 36940

CAS Registry No.:	6020-87-7
Formal Name:	N-(aminoiminomethyl)-N-methyl-glycine, monohydrate
MF:	$C_4H_9N_3O_2 \bullet H_2O$
FW:	149.1
Purity:	≥95%
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

Creatine (hydrate) is supplied as a solid. A stock solution may be made by dissolving the creatine (hydrate) in the solvent of choice, which should be purged with an inert gas. Creatine (hydrate) is soluble in the organic solvent DMSO at a concentration of approximately 1 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of creatine (hydrate) can be prepared by directly dissolving the solid in aqueous buffers. The solubility of creatine (hydrate) in PBS (pH 7.2) is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Creatine is a derivative of the amino acid glycine.[1] It is produced from glycine and L-arginine by arginine:glycine amidinotransferase (AGAT) and guanidinoacetate N-methyltransferase (GAMT) *via* a guanidinoacetate intermediate. Creatine circulates in the blood and enters tissues *via* the creatine transporter. In tissues, it is phosphorylated to creatine phosphate (Item Nos. 35598 | 37803), which is used as a reservoir of phosphoryl groups that can be transferred to ATP for the first few seconds of energy consumption, particularly in high-energy consumption tissues such as the brain and skeletal muscle.[2] Decreased brain levels of creatine are associated with inborn errors of creatine metabolism characterized by deficiency of AGAT, GAMT, or the creatine transporter.[1]

References

1. Item, C.B., Stöckler-Ipsiroglu, S., Stromberger, C., *et al.* Arginine:Glycine amidinotransferase deficiency: The third inborn error of creatine metabolism in humans. *Am. J. Hum. Genet.* **69(5)**, 1127-1133 (2001).
2. Berg, J.M., Tymoczko, J.L., and Stryer, L. Metabolism: Basic concepts and design. *Biochemistry*. 5th edition, *W. H. Freeman* (2002).

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