

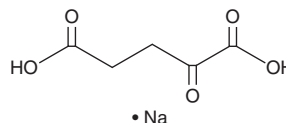
# PRODUCT INFORMATION



## $\alpha$ -Ketoglutaric Acid (sodium salt)

Item No. 9001828

**CAS Registry No.:** 22202-68-2  
**Formal Name:** 2-oxo-pentanedioic acid, monosodium salt  
**Synonyms:**  $\alpha$ -KGA, 2-Oxoglutaric Acid  
**MF:**  $C_5H_6O_5 \cdot Na$   
**FW:** 169.1  
**Purity:**  $\geq 95\%$   
**Supplied as:** A solid  
**Storage:**  $-20^\circ C$   
**Stability:**  $\geq 4$  years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

$\alpha$ -Ketoglutaric acid (sodium salt) is supplied as a solid. A stock solution may be made by dissolving the  $\alpha$ -ketoglutaric acid (sodium salt) in the solvent of choice, which should be purged with an inert gas.  $\alpha$ -Ketoglutaric acid (sodium salt) 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  $\alpha$ -ketoglutaric acid (sodium salt) can be prepared by directly dissolving the solid in aqueous buffers. The solubility of  $\alpha$ -ketoglutaric acid (sodium salt) in PBS (pH 7.2) is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

$\alpha$ -Ketoglutaric acid is an  $\alpha$ -keto acid and a rate-determining metabolic intermediate in the citric acid cycle in its conjugate base form,  $\alpha$ -ketoglutarate.<sup>1,2</sup> It is formed *via* oxidative decarboxylation of isocitrate by isocitrate dehydrogenase (IDH), oxidative deamination of glutamate by glutamate dehydrogenase, or by pyridoxal phosphate-dependent transamination.<sup>2</sup>  $\alpha$ -Ketoglutaric acid is decarboxylated to succinyl-CoA by  $\alpha$ -ketoglutarate dehydrogenase, a rate limiting step in the citric acid cycle. It is a precursor of glutamine and glutamate, energy sources for enterocytes and various immune cells, and an antioxidant with roles in immune homeostasis, aging, protein synthesis, and bone development.<sup>2,3</sup>

### References

1. Krebs, H.A., Salvin, E., and Johnson, W.A. The formation of citric and  $\alpha$ -ketoglutaric acids in the mammalian body. *Biochem. J.* **32(1)**, 113-117 (1938).
2. Wu, N., Yang, M., Gaur, U., *et al.* Alpha-ketoglutarate: Physiological functions and applications. *Biomol. Ther. (Seoul)* **24(1)**, 1-8 (2016).
3. Liu, S., He, L., and Yao, K. The antioxidative function of alpha-ketoglutarate and its applications. *Biomed. Res. Int.* **3408467** (2018).

#### 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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