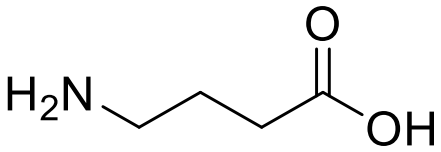
Product data sheet

MedKoo Cat#: 540147 Name: Gamma-aminobutyric acid CAS: 56-12-2 Chemical Formula: $C_4H_9NO_2$ Exact Mass: 103.0633 Molecular Weight: 103.121	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Gamma-aminobutyric acid is an endogenous neurotransmitter and GABA receptor agonist involved in neuronal excitability, muscle tone, stem cell growth, brain development, and mood. It decrease incidence of anxiety and seizures.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
Water	30.16	292.42

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	9.70 mL	48.49 mL	96.97 mL
5 mM	1.94 mL	9.70 mL	19.39 mL
10 mM	0.97 mL	4.85 mL	9.70 mL
50 mM	0.19 mL	0.97 mL	1.94 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Molagoda IMN, Kavinda MHD, Ryu HW, Choi YH, Jeong JW, Kang S, Kim GY. Gamma-Aminobutyric Acid (GABA) Inhibits α-Melanocyte-Stimulating Hormone-Induced Melanogenesis through GABAA and GABAB Receptors. Int J Mol Sci. 2021 Jul 31;22(15):8257. doi: 10.3390/ijms22158257. PMID: 34361022; PMCID: PMC8347673.
2. Ghani MW, Yi Z, Jiang W, Bin L, Cun LG, Birmany MW, Mei X. γ-Aminobutyric Acid (GABA) Induced in Vitro Differentiation of Rat Pancreatic Ductal Stem Cells into Insulin-Secreting Islet-Like Cell Clusters. Folia Biol (Praha). 2019;65(5-6):246-255. PMID: 32362308.

In vivo study

1. Nakamura U, Nohmi T, Sagane R, Hai J, Ohbayashi K, Miyazaki M, Yamatsu A, Kim M, Iwasaki Y. Dietary Gamma-Aminobutyric Acid (GABA) Induces Satiation by Enhancing the Postprandial Activation of Vagal Afferent Nerves. Nutrients. 2022 Jun 16;14(12):2492. doi: 10.3390/nu14122492. PMID: 35745222; PMCID: PMC9227210.
2. Lee H, Ji SY, Hwangbo H, Kim MY, Kim DH, Park BS, Park JH, Lee BJ, Kim GY, Jeon YJ, Choi YH. Protective Effect of Gamma Aminobutyric Acid against Aggravation of Renal Injury Caused by High Salt Intake in Cisplatin-Induced Nephrotoxicity. Int J Mol Sci. 2022 Jan 3;23(1):502. doi: 10.3390/ijms23010502. PMID: 35008928; PMCID: PMC8745502.

7. Bioactivity
Biological target:

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γ-Aminobutyric acid (4-Aminobutyric acid) is a major inhibitory neurotransmitter in the adult mammalian brain, binding to the ionotropic GABA receptors (GABAA receptors) and metabotropic receptors (GABAB) receptors.

In vitro activity

Consistent with the findings on *tyrosinase* activity, intracellular melanin staining revealed that α-MSH-treated cells contained higher melanin intensities than untreated cells, whereas GABA (20 mM) potently inhibited the high melanin intensity (Figure 2D). This study also confirmed that GABA inhibited α-MSH-induced *MITF* and *tyrosinase* expression in a concentration-dependent manner, at both the transcriptional (Figure 2E) and translational (Figure 2F) levels. These results indicate that GABA inhibits melanogenesis in B16F10 melanoma cells.

Reference: Int J Mol Sci. 2021 Jul 31;22(15):8257. https://pubmed.ncbi.nlm.nih.gov/34361022/

In vivo activity

PO administration of GABA (20 and 200 mg/kg) immediately before refeeding reduced food intake during 0–0.5 h after injection but did not alter locomotor activity in mice (Figure 2D). In the taste aversion test, PO GABA (200 mg/kg) or PO saline did not influence saccharine preference, unlike lithium chloride (Figure 2E). These results suggested that PO GABA administration induced satiation without aversion or locomotor impairment.

Reference: Nutrients. 2022 Jun 16;14(12):2492. https://pubmed.ncbi.nlm.nih.gov/35745222/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.