SYSY Antibodies

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DOPA decarboxylase

Cat.No. 369 003; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin was added for stabilization. For **reconstitution** add 50 µl H_2O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C to -80°C until use. Antibodies should be stored at +4°C when still lyophilized. Do not freeze! For detailed information, see back of the data sheet.
Applications	**WB**: 1 : 1000 (AP staining) **IP**: not tested yet **ICC**: not tested yet **IHC**: 1 : 500 up to 1 : 5000 **IHC-P (FFPE)**: 1 : 500 up to 1 : 5000
Immunogen	Full-length recombinant mouse DOPA decarboxylase (UniProt Id: O88533)
Reactivity	Reacts with: rat (P14173), mouse (O88533). Other species not tested yet.

TO BE USED IN VITRO / FOR RESEARCH ONLY
NOT TOXIC, NOT HAZARDOUS, NOT INFECTIOUS, NOT CONTAGIOUS

Background

DOPA decarboxylase (DDC), also known as aromatic L-amino acid decarboxylase (AADC), is the final enzyme in the biosynthesis of dopamine and serotonin. It catalyzes the decarboxylation of L-DOPA to dopamine and 5-hydroxytryptophan to serotonin [1,2]. In addition, it is responsible for the synthesis of the trace amines phenylethylamine, p-tyramine, and tryptamine, which are considered to act as neuromodulators [3].
DDC is expressed in both neuronal and non-neuronal tissues, including the brain, liver, kidney, small intestine, ovary, and peripheral blood vessels. Tissue-specific expression is regulated by distinct neuronal and non-neuronal promoters, producing transcript isoforms with differences in their 5′ untranslated regions and alternative exons [1,4].
DDC has a central role in neurotransmitter biosynthesis and is therefore essential for dopaminergic and serotonergic signaling. In Parkinson's disease, DDC is particularly important by mediating parts of the therapeutic effect of L-DOPA treatment [2,5]. Alterations in DDC activity or expression may influence the response to therapy and disease-associated neurotransmitter metabolism [2,6]. Evidence also suggests that altered circulating DDC activity may have potential as a biomarker for Parkinson's disease [7].

Selected References for 369 003

Mutations in Parkinsonism-linked endocytic proteins synaptojanin1 and auxilin have synergistic effects on dopaminergic axonal pathology.
Ng XY, Wu Y, Lin Y, Yaqoob SM, Greene LE, De Camilli P, Cao M
NPJ Parkinson's disease (2023) 91: 26. . **WB, IHC; tested species: mouse**

Central biogenic amine deficiency with concomitant exploratory behavioral deficits in Dnajc12 knock-out mice.
Deng IB, Follett J, Fox JD, Wall S, Farrer MJ
NPJ Parkinson's disease (2025) 111: 143. . **WB; tested species: mouse**

β-synuclein potentiates synaptic vesicle dopamine uptake and rescues dopaminergic neurons from MPTP-induced death in the absence of other synucleins.
Ninkina N, Millership SJ, Peters OM, Connor-Robson N, Chaprov K, Kopylov AT, Montoya A, Kramer H, Withers DJ, Buchman VL
The Journal of biological chemistry (2021) : 101375. . **WB; tested species: mouse**

Loss of PTEN-induced kinase 1 (Pink1) reduces hippocampal tyrosine hydroxylase and impairs learning and memory.
Maynard ME, Redell JB, Kobori N, Underwood EL, Fischer TD, Hood KN, LaRoche V, Waxham MN, Moore AN, Dash PK
Experimental neurology (2019) 323: 113081. . **WB; tested species: mouse**

Selected General References

Distinct promoters direct neuronal and nonneuronal expression of rat aromatic L-amino acid decarboxylase.
Albert VR et al. Proc. Natl. Acad. Sci. U.S.A. (1992) PubMed:1465439

Serum aromatic l-amino acid decarboxylase activity as a biomarker for prodromal and manifest Parkinson's disease.
Beckers M et al. EBioMedicine (2026) PubMed:42424702

Expression of Human L-Dopa Decarboxylase (DDC) under Conditions of Oxidative Stress.
Lotsios NS et al. Curr Issues Mol Biol (2023) PubMed:38132481

Mammalian Dopa decarboxylase: structure, catalytic activity and inhibition.
Bertoldi M et al. Arch Biochem Biophys (2014) PubMed:24407024

Enhancing aromatic L-amino acid decarboxylase activity: implications for L-DOPA treatment in Parkinson's disease.
Hadjiconstantinou M et al. CNS Neurosci Ther (2008) PubMed:19040557

Access the online factsheet including applicable protocols at https://sysy.com/product/369003 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All SYSY antibodies and control proteins/peptides are shipped lyophilized (vacuum freeze-dried). In this form, they remain stable without loss of quality at ambient temperatures for several weeks.

Storage of Sealed Vials after Delivery

- **Unlabeled** and **biotin-labeled antibodies** and **control proteins** should be stored at **4°C** before reconstitution. **Do not freeze lyophilized antibodies**. Temperatures below 0°C may impair performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long-term storage of lyophilized fluorophore-conjugates may cause aggregation.
- **Control peptides** should be stored at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- **Do not use frost-free ("no-frost") freezers.** These units periodically warm to remove ice buildup, causing freeze–thaw cycles that can damage antibodies.
- Store vials in areas with minimal temperature fluctuation - preferably toward the back of the freezer, not on the door.
- Aliquot reconstituted antibodies and store at –20°C to –80°C.
- Avoid very small aliquots (<20 µL), as evaporation and adsorption to tube surfaces can reduce antibody concentration and activity.
- Use the smallest practical storage vial to minimize surface area.
- Adding glycerol to a final concentration of 50% prevents freezing at -20°C, allowing storage in liquid form and effectively avoiding freeze–thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C

Monoclonal Antibodies

- **Ascites and hybridoma supernatant:** Store at -20°C to -80°C
  Prolonged storage at 4°C is not recommended, as proteases present in ascites may degrade antibodies.
- **Purified IgG:** Store at -20°C to -80°C
  Adding a carrier protein (e.g., BSA) enhances long-term stability.
  Many SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Polyclonal Antibodies

- **Crude antisera:** Can be stored at 4°C with antimicrobials added, but -20°C to -80°C is preferred
- **Affinity-purified antibodies:** Less stable than antisera; store at -20°C to -80°C
  Adding a carrier protein such as BSA improves long-term stability.
  Most SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Fluorescence-labeled Antibodies

- Store as a liquid with 1:1 (v/v) glycerol at -20°C, and protect from light exposure

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All purified SYSY antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the volume of deionized water specified in the corresponding datasheet. If a larger final volume is desired, first add the recommended amount of water, then adjust with PBS and, if needed, add a stabilizing carrier protein (e.g., BSA) to a final concentration of 2%. Some SYSY antibodies already contain albumin; please take this into account before adding additional carrier protein.

For complete reconstitution, carefully remove the vial cap. After adding water, briefly vortex the solution. To collect the liquid at the bottom of the vial, place the vial inside a 50 ml centrifuge tube padded with paper and centrifuge briefly.

- If desired, small amounts of azide or thimerosal may be added to prevent microbial growth. This is particularly recommended when storing an aliquot at 4°C.
- After reconstitution of fluorescence-labeled antibodies, add glycerol 1:1 (v/v) to achieve a final concentration of 50%. This prevents freezing at –20°C and keeps the antibody in liquid form, effectively avoiding freeze–thaw cycles.
- Glycerol may also be added to unlabeled primary antibodies as a general measure to prevent freeze–thaw damage.
- For further guidance, please refer to our **storage tips** and recommendations for reconstituted antibodies, control peptides, and control proteins.