

GCS- α -1 (D-9): sc-376502

BACKGROUND

Guanylate cyclases belong to the adenylyl cyclase class-4/guanylyl cyclase family. There are two forms of guanylate cyclase. The soluble forms, known as GCS or sGC, act as receptors for nitric oxide. The membrane-bound receptor forms, known as GC, are peptide hormone receptors. GCS, a cGMP-synthesizing enzyme, is the major receptor for the neurotransmitter nitric oxide (NO). It plays a crucial role in smooth muscle contractility, platelet reactivity and neurotransmission. GCS is a heme containing heterodimer, consisting of one α subunit, designated GCS- α -1, and one β subunit. The heme moiety mediates NO activation, and this heme group also binds carbon monoxide, which weakly stimulates the enzyme. Both NO and CO stimulation are enhanced by the allosteric activator 3-(5'-hydroxymethyl-2'-furyl)-benzyl-indazole, YC-1. YC-1 can also stimulate GCS in a NO-independent manner. Both the α and β subunits are required for cGMP generation, and at least two isoforms exist for each subunit. Heterodimers consisting of α -1/ β -1 and α -2/ β -1 have been identified, and both display similar enzymatic activity.

REFERENCES

1. Yuen, P., et al. 1990. A new form of guanylyl cyclase is preferentially expressed in rat kidney. *Biochemistry* 29: 10872-10878.
2. Wedel, B., et al. 1995. Functional domains of soluble guanylyl cyclase. *J. Biol. Chem.* 270: 24871-24875.
3. Bellamy, T., et al. 2000. Rapid desensitization of the nitric oxide receptor, soluble guanylyl cyclase, underlies diversity of cellular cGMP responses. *Proc. Natl. Acad. Sci. USA* 97: 2928-2933.
4. Lee, Y., et al. 2000. Human recombinant soluble guanylyl cyclase: expression, purification, and regulation. *Proc. Nat. Acad. Sci. USA* 97: 10763-10768.

CHROMOSOMAL LOCATION

Genetic locus: GUCY1A3 (human) mapping to 4q32.1; Gucy1a3 (mouse) mapping to 3 E3.

SOURCE

GCS- α -1 (D-9) is a mouse monoclonal antibody raised against amino acids 1-155 of GCS- α -1 of human origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

GCS- α -1 (D-9) is available conjugated to agarose (sc-376502 AC), 500 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-376502 HRP), 200 μ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376502 PE), fluorescein (sc-376502 FITC), Alexa Fluor[®] 488 (sc-376502 AF488), Alexa Fluor[®] 546 (sc-376502 AF546), Alexa Fluor[®] 594 (sc-376502 AF594) or Alexa Fluor[®] 647 (sc-376502 AF647), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-376502 AF680) or Alexa Fluor[®] 790 (sc-376502 AF790), 200 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

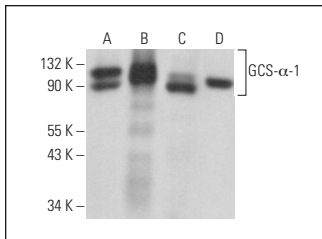
GCS- α -1 (D-9) is recommended for detection of GCS- α -1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for GCS- α -1 siRNA (h): sc-41010, GCS- α -1 siRNA (m): sc-41011, GCS- α -1 siRNA (r): sc-60101, GCS- α -1 shRNA Plasmid (h): sc-41010-SH, GCS- α -1 shRNA Plasmid (m): sc-41011-SH, GCS- α -1 shRNA Plasmid (r): sc-60101-SH, GCS- α -1 shRNA (h) Lentiviral Particles: sc-41010-V, GCS- α -1 shRNA (m) Lentiviral Particles: sc-41011-V and GCS- α -1 shRNA (r) Lentiviral Particles: sc-60101-V.

Molecular Weight of GCS- α -1: 72 kDa.

Positive Controls: human kidney extract: sc-363764, human liver extract: sc-363766 or MOLT-4 cell lysate: sc-2233.

DATA



GCS- α -1 (D-9): sc-376502. Western blot analysis of GCS- α -1 expression in human kidney (A), rat kidney (B) and human liver (C) tissue extracts and MOLT-4 whole cell lysate (D).

SELECT PRODUCT CITATIONS

1. Potje, S.R., et al. 2018. Endothelial modulation of a nitric oxide donor complex-induced relaxation in normotensive and spontaneously hypertensive rats. *Life Sci.* 201: 130-140.
2. Liu, Y., et al. 2018. Prenatal high-salt diet impaired vasodilatation with reprogrammed renin-angiotensin system in offspring rats. *J. Hypertens.* 36: 2369-2379.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.