SANTA CRUZ BIOTECHNOLOGY, INC.

GCS-α-2 (N-12): sc-21167

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Guanylate cyclases belong to the adenylyl cyclase class-4/guanylyl cyclase family. There are two forms of guanylate cyclase. The soluble form, known as GCS or sGC, act as receptors for nitric oxide (NO). The membrane-bound receptor form, known as GC, are peptide hormone receptors. GCS is a cGMP-synthesizing enzyme, which is the major receptor for the neurotransmitter nitric oxide. It plays a crucial role in smooth muscle contractility, platelet reactivity and neurotransmission. GCS is a heme-containing heterodimer, consisting of one α subunit and one β subunit. The heme moeity mediates NO activation, and this heme group also binds carbon monoxide (CO), 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 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. The distribution of the β-2 subunit seems to be much more restricted than the β-1 subunit, with predominant expression in kidney and liver.

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. Natl. Acad. Sci. USA 97: 10763-10768.
5. Ibarra, C., et al. 2001. Regional and age-dependent expression of the nitric oxide receptor, soluble guanylyl cyclase, in the human brain. Brain Res. 907: 54-60.
6. Koblin, M., et al. 2001. Nitric oxide activates the β-2 subunit of soluble guanylyl cyclase in the absence of a second subunit. J. Biol. Chem. 276: 30737-30743.
7. Martin, E., et al. 2001. YC-1 activation of human soluble guanylyl cyclase has both heme-dependent and heme-independent components. Proc. Natl. Acad. Sci. USA 98: 12938-12942.
8. Gibb, B., et al. 2001. Subunits of nitric oxide receptor, soluble guanylyl cyclase, expressed in rat brain. Eur. J. Neurosci. 13: 539-544.

CHROMOSOMAL LOCATION

Genetic locus: GUCY1A2 (human) mapping to 11q22.3.

SOURCE

GCS-α-2 (N-12) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of GCS-α-2 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-21167 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

GCS-α-2 (N-12) is recommended for detection of GCS-α-2 of human and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg 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).

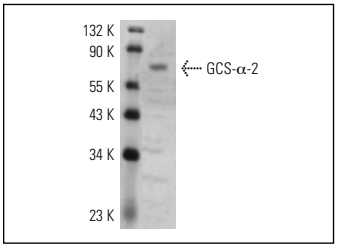
GCS-α-2 (N-12) is also recommended for detection of GCS-α-2 in additional species, including bovine and porcine.

Suitable for use as control antibody for GCS-α-2 siRNA (h): sc-41012, GCS-α-2 shRNA Plasmid (h): sc-41012-SH and GCS-α-2 shRNA (h) Lentiviral Particles: sc-41012-V.

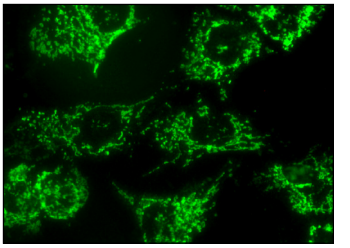
Molecular Weight of GCS-α-2: 82 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, HL-60 whole cell lysate: sc-2209 or Jurkat whole cell lysate: sc-2204.

DATA



GCS-α-2 (N-12): sc-21167. Western blot analysis of GCS-α-2 expression in Hep G2 whole cell lysate.



GCS-α-2 (N-12): sc-21167. Immunofluorescence staining of formalin-fixed Hep G2 cells showing cytoplasmic localization.

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 or our catalog for detailed protocols and support products.