SANTA CRUZ BIOTECHNOLOGY, INC.

GR Consensus and Mutant Oligonucleotides

BACKGROUND

Electrophoretic mobility shift assays (EMSAs), also known as gel shift assays, provide a relatively straightforward and sensitive method for studying binding interactions between transcription factors and consensus DNA binding elements. For such studies, DNA probes are provided as double-stranded oligonucleotides designed with 5' OH blunt ends to facilitate labeling to high specific activity with polynucleotide kinase. These are constructed both with specific DNA binding consensus sequences for various transcription factors and as control or "mutant" probes in which one or more nucleotides mapping within the consensus binding site has been substituted.

REFERENCES

1. Dignam, J.D., et al. 1983. Accurate transcription initiation by RNA polymerase II in a soluble extract from isolated mammalian nuclei. Nucleic Acids Res. 11: 1475-1489.
2. Murre, C., et al. 1991. B cell- and myocyte-specific E2-box-binding factors contain E12/E47-like subunits. Mol. Cell. Biol. 11: 1156-1160.

GEL SHIFT ASSAYS

For gel shift analysis, prepare nuclear extracts following the method of Dignam, et al (1).

- NOTE: Spin oligonucleotide vial before opening. Product may be lodged in vial cap.
- Label oligonucleotide probe (TransCruz™ Gel Shift Oligonucleotides) with [γ^{32} P]-ATP to 50,000 cpm/ng by using polynucleotide kinase.
- Prepare gel shift reaction buffer as follows: 10 mM Tris (Tris: sc-3715), pH 7.5, 50 mM NaCl (NaCl: sc-29108, 1 mM dithiothreitol (DTT: sc-29089), 1 mM EDTA (EDTA: sc-29092), 5% glycerol (glycerol: sc-29095).
- Prepare 20 µl reaction mixture containing 3-10 µg nuclear extract and 1 µg poly dI-dC in gel shift reaction buffer. Add 0.5 ng labeled oligonucleotide probe and incubate for 20 minutes at room temperature. This constitutes the control sample for detection of DNA-protein complexes (2).
- To detect an antibody supershift or block of the DNA-protein complex, prepare reaction mixture as described above, also adding 1-2 µl of the appropriate TransCruz™ Gel Supershift antibody per 20 µl of reaction volume. Antibody is normally added subsequent to addition of labeled oligonucleotide probe, but result may be improved by adding antibody prior to probe. Incubate at 4° C for 1 hour to overnight, or at room temperature for 15-45 minutes.
- Resolve DNA-protein complexes by electrophoresis (25-35 ma) through a 4% polyacrylamide gel containing 50 mM Tris, pH 7.5, 0.38 M glycine (glycine: sc-29096) and 2 mM EDTA. Dry the gel and visualize by autoradiography.

STORAGE

Store at -20° C; stable for one year from the date of shipment.

NOTE: Spin oligonucleotide vial before opening. Product may be lodged in vial cap.

PRODUCT

GR CONSENSUS OLIGONUCLEOTIDE: sc-2545

- binding site for the glucocorticoid receptor (3)

5' – GAC CCT AGA GGA TCT GTA CAG GAT GTT CTA GAT – 3'
3' – CTG GGA TCT CCT AGA CAT GTC CTA CAA GAT CTA – 5'

GR MUTANT OLIGONUCLEOTIDE: sc-2546

- identical to sc-2545 with the exception of two "GT"→"CA" substitutions in the GR binding motif (3)

5' – GAC CCT AGA GGA TCT CAA CAG GAT CAT CTA GAT – 3'
3' – CTG GGA TCT CCT AGA GTT GTC CTA GTA GAT CTA – 5'

SELECT PRODUCT CITATIONS

1. Zuo, Z., et al. 1999. Ser/Thr protein phosphatase type 5 (PP5) is a negative regulator of glucocorticoid receptor-mediated growth arrest. Biochemistry 38: 8849-8857.
2. Breslin, M.B., et al. 2001. Multiple promoters exist in the human GR gene, one of which is activated by glucocorticoids. Mol. Endocrinol. 15: 1381-1395.
3. Pruett, S.B., et al. 2003. Characterization of glucocorticoid receptor translocation, cytoplasmic IκB, nuclear NFκB, and activation of NFκB in T lymphocytes exposed to stress-inducible concentrations of corticosterone *in vivo*. Int. Immunopharmacol. 3: 1-16.
4. Geng, C.D. and Vedeckis, W.V. 2004. Steroid-responsive sequences in the human glucocorticoid receptor gene 1A promoter. Mol. Endocrinol. 18: 912-924.
5. Roberts, L.E., et al. 2007. PD98059 enhanced Insulin, cytokine, and growth factor activation of xanthine oxidoreductase in epithelial cells involves Stat3 and the glucocorticoid receptor. J. Cell. Biochem. 101: 1567-1587.
6. Yang, J.Q., et al. 2008. Cell density and serum exposure modify the function of the glucocorticoid receptor C/EBP complex. Am. J. Respir. Cell Mol. Biol. 38: 414-422.
7. Geng, C.D., et al. 2008. A conserved molecular mechanism is responsible for the auto-up-regulation of glucocorticoid receptor gene promoters. Mol. Endocrinol. 22: 2624-2642.
8. Rüdiger, J.J., et al. 2013. Fast beneficial systemic anti-inflammatory effects of inhaled budesonide and formoterol on circulating lymphocytes in asthma. Respirology 18: 840-847.
9. Kook, I., et al. 2015. Bovine herpesvirus 1 productive infection and immediate early transcription unit 1 promoter are stimulated by the synthetic corticosteroid dexamethasone. Virology 484: 377-385.
10. Eisa, N.H., et al. 2019. The co-chaperone UNC45A is essential for the expression of mitotic kinase NEK7 and tumorigenesis. J. Biol. Chem. 294: 5246-5260.

RESEARCH USE

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