

Anti-Keratan sulfate (373E1)**BACKGROUND**

Keratan sulfates (KSs) are sulfated polymers of *N*-acetyllactosamine structured by repeating (1→3)-β-D-galactose-(1→4)-β-D-*N*-acetylglucosamine units, which are generally sulfated at position C6 of the hexosamine and/or galactosamine. They are mostly covalently bound to core proteins of KS-bearing proteoglycans (PGs), but a few non-proteoglycan KS-substituted macromolecules have been described, and their attachment to protein backbones occurs primarily through an *N*-linkage involving glucosamine binding to an asparagine residue. These are referred to as type I KSs and are characteristic of the corneal ECM. KS chains may also be bound to proteins through an *O*-glycosidic linkage between galactosamine and a serine or threonine residue, i.e. referred to as type II KSs and highly represented in articular cartilage ECM. Phosphocan and other KS-containing PGs of the brain may also carry KS chains attached to the core protein through an alternative mannose-serine/threonine linkage.

One of the complexities of KSs is the variable degree of chain branching (i.e. bi-antennary in the cornea and more intricate branching in skeletal KS), which together with the variable extent and positioning of the sulfate groups and the relative frequency, linkage and type of capping fucose and/or neuraminic acid residues, creates a spectrum of putative functionally diverse KS moieties. For instance, sialic acid residues may coincidentally, or in an alternated fashion be present in an α(1-3), α(2-3) or α(2-6)-linkage, and may or may not associate with α(1-3)-linked fucoses.

Product type	Primary antibody
Host	Rat
Source	Hybridoma cell culture
Form	Liquid
	Supernatant with 0.05% NaN ₃ as a preservative.
Volume	2 ml
Specificity	Keratan sulfates
Antigen	Purified avian embryonic proteoglycans
Isotype	IgM

Application notes	Recommended use
	WB, IHC(P), IP, FC, ELISA

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Recommended dilutions

Western blotting, 1/50 to 1/170

Band sizing and pattern depends upon the core protein size of the molecule (mostly proteoglycans) bearing keratin sulfate chains. If isolated chains are separated by PAGE, the banding pattern appears as a smear and the approximate molecular weights of the bands depend upon the mass and polydispersity of the chains.

Immunohistochemistry, 1/50 to 1/150

ELISA, 1/100 – 1/500

Optimal dilutions/concentrations should be determined by the end user.

Staining Pattern

Ubiquitously expressed through the body of vertebrates and expressed early on during embryogenesis around the notochord. Up-regulated in many tumour cells of epithelial origin and within the tumour stroma. Primary diagnostic marker of papillary type thyroid carcinoma.

Cross reactivity

ALL species

Storage

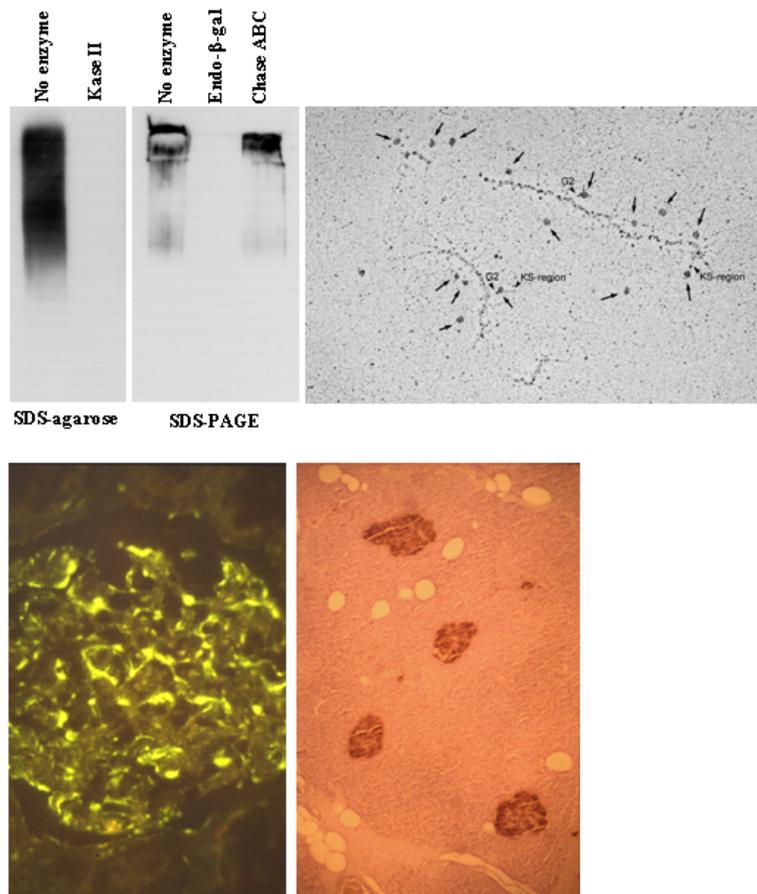
Store at 4°C (-20° C for prolonged storage)

Aliquot to avoid cycles of freeze/thaw.

References

1) Magro, M., Perissinotto, D., Schiappacassi, M., Goletz, S., Otto, A., Müller, E.-C., Bisceglie, M., Brown, G., Ellis, T., Colombatti, A., Perris, R. 2003. Proteomic and post-proteomic characterization of keratan sulfate-glycanated isoforms of thyroglobulin and transferrin uniquely elaborated by papillary thyroid carcinoma. *Am J. Pathol.* 163, 183-196.

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Upper panel: *Left* - Western blotting of purified human articular cartilage aggrecan resolved prior to and after keratanase II, endo- β -galactosidase-, or chondroitinase ABC-digestion on SDS-Agarose electrophoresis (left gel) or 3-8% gradient gels. *Right* - TEM rotary shadowing image of the binding of mAb 373E1 to keratan sulfate chains (arrows) of human articular cartilage aggrecan forming an hyaluronan-proteoglycan aggregate in vitro. **Lower panel:** *Left image* – immunohistochemical staining (FITC-conjugated secondary antibodies) with mAb 373E1 of keratan sulfates of the ECM deposited with a glomerule of human kidney (PFA-OCT embedding and cryosectioning). *Right image* – immunohistochemical staining of keratan sulfates deposited within Langerhans islands of human adult pancreas (Formalin-paraffin embedding).

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