Data Sheet

Product Name:	Pentosan Polysulfate
Cat. No.:	CS-7813
CAS No.:	37300-21-3
Molecular Formula:	N/A
Molecular Weight:	4000-6000
Target:	HIV
Pathway:	Anti-infection
Solubility:	DMSO : < 1 mg/mL (insoluble or slightly soluble); H2O : < 0.1 mg/mL (insoluble)

Pentosan Polysulfate

BIOLOGICAL ACTIVITY:

Pentosan Polysulfate is an orally bioavailable medication with anti-inflammatory and pro-chondrogenic properties. Pentosan Polysulfate also is a potent and selective anti-**HIV** agent. Pentosan Polysulfate is used for the treatment of interstitial cystitis[1][2]. IC50 & Target: HIV, NF-κB[1][2] **In Vitro:** Pentosan polysulfate has been shown to inhibit HIV-1 activity with an ED_{50} of 0.19 μg/mL in MT-4 cells. It inhibits HIV-1 antigen expression in HUT-78 cells at an ED_{50} of 0.02 μg/mL, and complete inhibition of HIV-1 antigen expression is obtained at a concentration of 4.0 μg/mL[2].

Pentosan Polysulfate suppresses NF-κB, decreases the proinflammatory actions of TNFα, and decreases high glucose and advanced glycation end products (AGEs) stimulated MCP-1 production[3]. **In Vivo:** Pentosan polysulfate has been shown to decreases interstitial inflammation and glomerulosclerosis in 5/6 nephrectomized rats. Pentosan polysulfate treatment preserves renal function, significantly reduces albuminuria, and markedly decreases the severity of renal lesions, including tubulointerstitial inflammation. Pentosan polysulfate also reduces upregulation of TNFα and proinflammatory genes in aging diabetic kidneys[3].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: [1]MT-4 and HUT-78 cells are cultured in microtray wells in the presence of pentosan polysulfate (0-2500 μg/mL) added immediately after infection with 100 CCIDs0 of HIV-1 (CCIDs0 being the 50% cell culture infective dose). After 5 days incubation at 37°C, the number of viable ceils is determined by the 3'-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) method[1].

Animal Administration: [2][3]Mice with stable hyperglycemia at 18 months of age are selected for the study. **Eighteen-month-old diabetic mice are randomly divided into pentosan polysulfate-treated (25 mg/kg/day in the drinking water) and control groups.** Diabetic mice are followed for 4 months without insulin treatment. Mouse is housed individually and water intake is recorded every other day. Body weight and blood glucose levels are monitored weekly. Additionally, urine ketones are examined. Urine albumin excretion is measured bi-weekly[2].

One-month-old MPS VI rats are given once weekly sc injections of Pentosan Polysulfate (1, 2 and 4 mg/kg, human equivalent dose (HED)), or daily oral Pentosan Polysulfate (4 mg/kg HED) for 6 months. Serum inflammatory markers and total glycosaminoglycans (GAGs) are measured, as are several histological, morphological and functional endpoints[3].

References:

[1]. Schuchman EH, et al. Pentosan polysulfate: a novel therapy for the mucopolysaccharidoses. PLoS One. 2013;8(1):e54459.

[2]. Baba M, et al. Pentosan polysulfate, a sulfated oligosaccharide, is a potent and selective anti-HIV agent in vitro. Antiviral Res. 1988 Sep;9(6):335-43.

[3]. Wu J, et al. Inhibition of inflammation by pentosan polysulfate impedes the development and progression of severe diabetic nephropathy in aging C57B6 mice. Lab Invest. 2011 Oct;91(10):1459-71.

CAIndexNames:

Xylan, hydrogen sulfate

SMILES:

[Pentosan Polysulfate]

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