Pentosan Polysulfate

Cat. No.: HY-A0203

CAS No.: 37300-21-3

Target: HIV

Pathway: Anti-infection

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.

Pentosan Polysulfate

SOLVENT & SOLUBILITY

In Vitro	DMSO : < 1 mg/mL (ultrasonic) (insoluble or slightly soluble) H_2O : < 0.1 mg/mL (insoluble)

BIOLOGICAL ACTIVITY

Description	Pentosan Polysulfate is an orally bioavailable medication with anti-inflammatory and pro-chondrogenic properties. Pentosan Polysulfate also displays a potent and selective anti-HIV activity. Pentosan Polysulfatecan be used for the research of interstitial cystitis[1][2].
IC_{50} & Target	HIV-1
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]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
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]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

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]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
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]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

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.

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