Product Data Sheet

Product Name: Chitosan (Deacetylated chitin)
Cat. No.: GC34082

Chemical Properties

Cas. No.	9012-76-4		
SMILES	O[C@H]1[C@H](O)[C@@H](N)[C@H](O[C@H]2[C@H](O)[C@@H](N)[C@H](O[C@H]3[C@H](O)[C@@H](N)[C@H](O)O[C@@H]3CO)O[C@@H]2CO)O[C@@H]1CO.[n]		
Formula	$(C_6H_{13}NO_5)n$	M.Wt	161.16(monomer)
Solubility	Water : 0.67 mg/mL (ultrasonic and adjust pH to 3 with HCl);Water : < 0.1 mg/mL (insoluble);DMSO : < 1 mg/mL (insoluble or slightly soluble)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure	Chitosan (Deacetylated chitin)		

Background

Chitosan is a natural polycationic linear polysaccharide derived from chitin.

Chitosans are recognized as versatile biomaterials because of their non-toxicity, low allergenicity, biocompatibility and biodegradability. Chitosan is reported to have other biological properties, such as antitumor, antimicrobial, and antioxidant activities. It can be used in water treatment, wound-healing materials, pharmaceutical excipient or drug carrier, obesity treatment and as a scaffold for tissue engineering[1]. Antimicrobial activity of chitosan has been demonstrated against many bacteria, filamentous fungi and yeasts. Chitosan has wide spectrum of activity and high killing rate against Gram-positive and Gram-negative bacteria, but lower toxicity toward mammalian cells[2]. Chitosan exhibits antitumor activity against different types of cancer. For example, chitosan decreases adhesion of primary melanoma A375 cell line and decreases

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

proliferation of primary melanoma SKMEL28 cell line, it has potent pro-apoptotic effects against RPMI7951, a metastatic melanoma cell line[3]. Chitosan and its derivatives act as antioxidants by scavenging oxygen radicals such as hydroxyl, superoxide, alkyl as well as highly stable DPPH radicals in vitro[4].

Chitosan treatment dramatically increases lifespan and inhibits tumor metastasis especially in treatment groups of the low-molecular weight compound[5]. Chitosan has some apparent treatment effects on rat PCP by reducing HSP70 mRNA expression and lung inflammation, increasing the concentrations of IL-10 and IFN-γ as well as CD4(+) T-lymphocyte numbers, reducing the CD8(+) T-lymphocyte numbers and the concentration of TNF-α and inducing significant ultrastructural damage to P. carinii[6].

[1]. Cheung RC, et al. Chitosan: An Update on Potential Biomedical and Pharmaceutical Applications. Mar Drugs. 2015 Aug 14;13(8):5156-86. [2]. Kong M, et al. Antimicrobial properties of chitosan and mode of action: a state of the art review. Int J Food Microbiol. 2010 Nov 15;144(1):51-63. [3]. Gibot L, et al. Anticancer properties of chitosan on human melanoma are cell line dependent.Int J Biol Macromol. 2015 Jan;72:370-9. [4]. Younes I, et al. Chitin and chitosan preparation from marine sources. Structure, properties and applications. Mar Drugs. 2015 Mar 2;13(3):1133-74. [5]. Yeh MY, et al. Effects of chitosan on xenograft models of melanoma in C57BL/6 mice and hepatoma formation in SCID mice. Anticancer Res. 2013 Nov;33(11):4867-73. [6]. Liu AB, et al. Therapeutic efficacies of chitosan against Pneumocystis pneumonia of immunosuppressed rat. Parasite Immunol. 2014 Jul;36(7):292-302