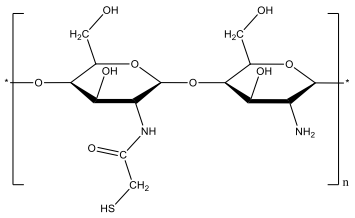
Sample Name:
Thiolated chitosan (*thiolated with thioglycolic acid*)

Sample #: **P43916-TCS**

Structure:

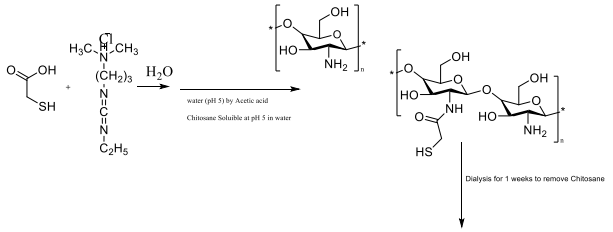


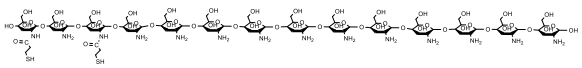
Composition:

Dynamic viscosity of native chitosan:	*Degree of thiolation:*
50–100 mPa·s, (0.5% in 0.5% Acetic Acid at 20°C)	14 mol%

Synthesis procedure:

The thiolated chitosan was prepared from chitosan using thioglycolic acid and EDAC•HCl. A scheme of reaction is shown below.





Chemical Formula: $C_{90}H_{164}N_{14}O_{59}S_2$
Molecular Weight: 2450.5
Elemental Analysis: C, 44.11; H, 6.75; N, 8.00; O, 38.52; S, 2.62

2 unit pr14 units of chitosane thiolated= 20 mole%

Purification:

The obtained thiolated chitosan was extensively dialyzed through cellulose membrane (MW cut-off, 5000) against water containing 5 mM HCl and 1% NaCl. The product was filtered off and lyophilized (freeze-dried).

The recommended storage temperature: around 4°C.

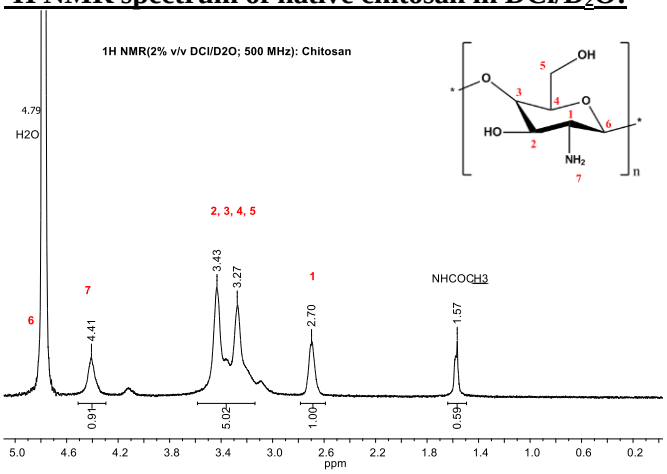
Characterization:

The product was analyzed by proton NMR and FT-IR spectroscopies. The degree of -SH functionalization was calculated from elemental analysis data.

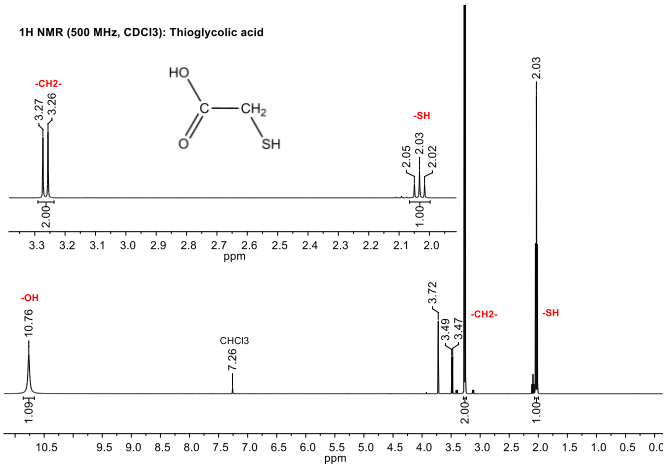
Solubility:

The polymer is soluble in water and aqueous hydrochloric acid solution, and has a limited solubility in DMSO.

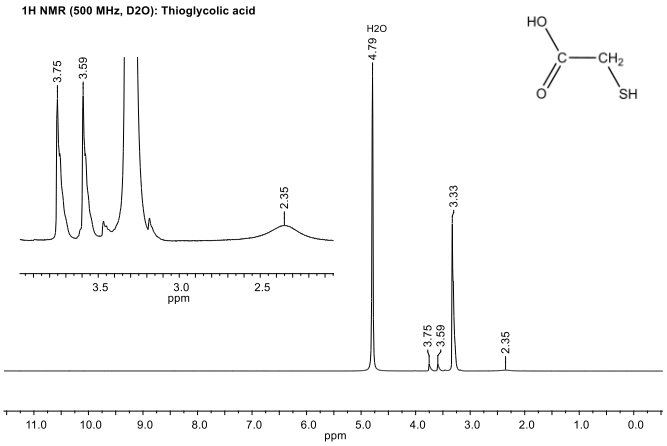
^{1}H NMR spectrum of native chitosan in DCl/D_2O:



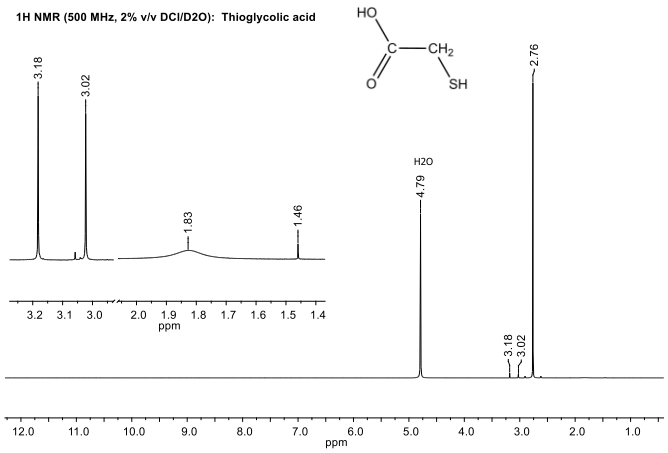
^{1}H NMR spectrum of thioglycolic acid in $CDCl_3$:



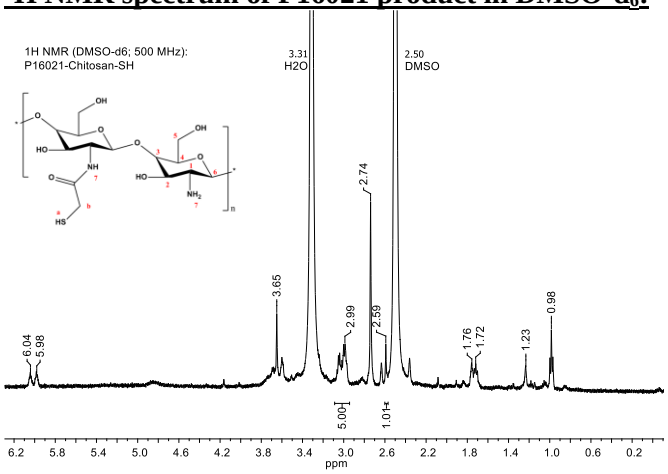
^{1}H NMR spectrum of thioglycolic acid in D_2O:



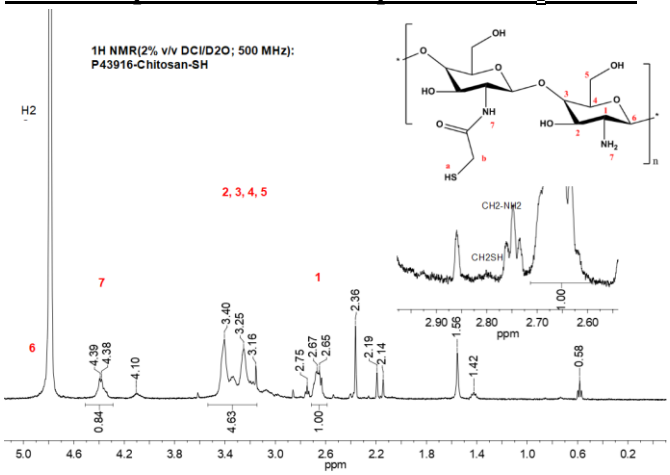
^{1}H NMR spectrum of thioglycolic acid in DCl/D_2O:



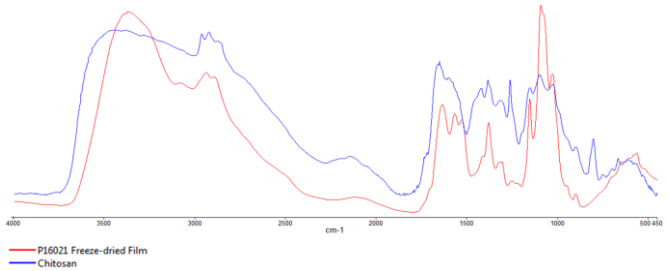
^{1}H NMR spectrum of P16021 product in DMSO-d_6:



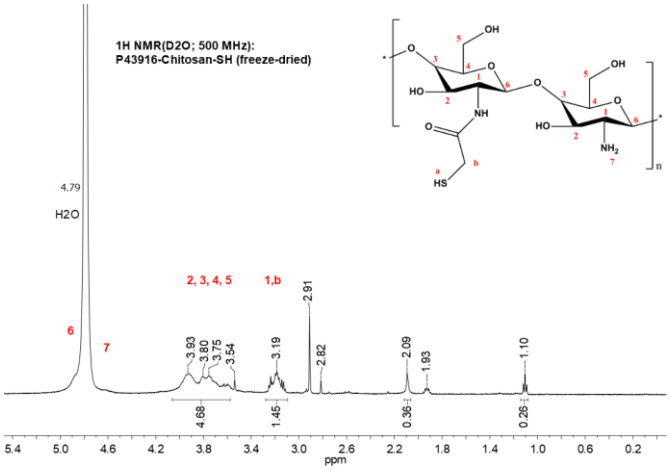
^{1}H NMR spectrum of P43916 product in D_2O/DCl:



FT-IR absorption spectra of native chitosan (blue curve) and thiolated chitosan (red curve):



^{1}H NMR spectrum of P16021 product in D_2O:



Elemental analyses of native chitosan and P43916:

Identification de l'échantillon:	CHITOSAN
Formule moléculaire:	C6 H11 N O4
Méthode utilisée:	160531E

Elemental Analysis for $C_6H_{11}NO_4^{2+}$
C, 44.72; H, 6.88; N, 8.69; O, 39.71

Sample Name	% Nitrogen	% Carbon	% Hydrogen
POL1-1	7,41	41,14	6,88
POL1-2	7,31	41,12	6,88
	% Nitrogen	**% Carbon**	**% Hydrogen**
Moyenne	7,36	41,13	6,88
Théorie:	8,70	44,70	6,90

Formule moléculaire:	C8 H13 N O5 S
Méthode utilisée:	160601E

Sample Name	% Nitrogen	% Carbon	% Hydrogen	% Sulphur
POL3-1	6.96	35.61	6.44	2.78