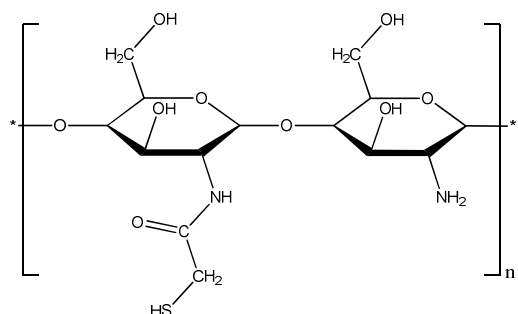


Sample Name:

Thiolated chitosan (thiolated with thioglycolic acid)

Sample #: **P16021-TCS**

Structure:

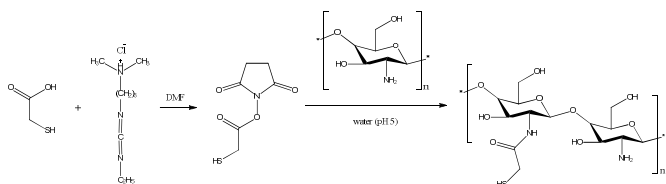


Composition:

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

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



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.

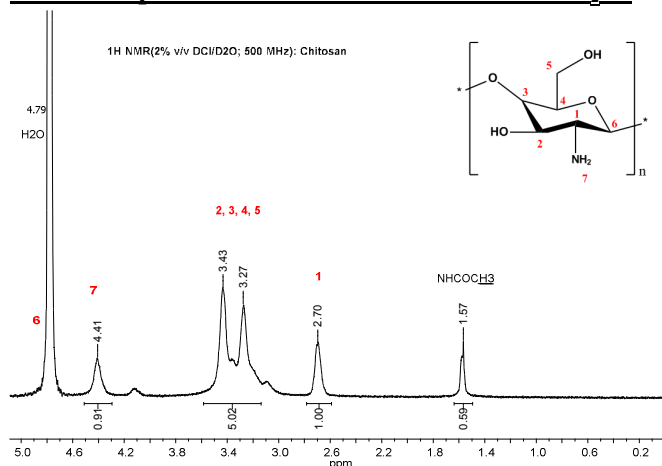
Characterization:

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

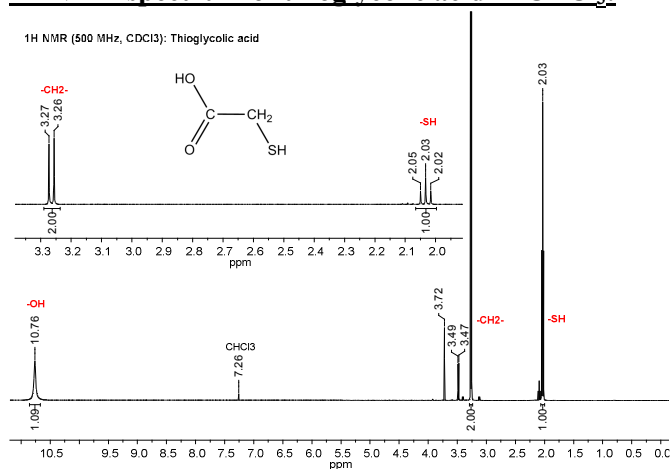
Solubility:

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

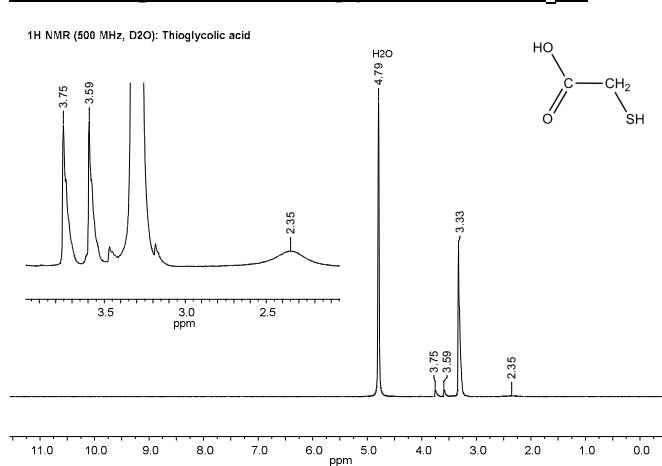
¹H NMR spectrum of native chitosan in DCI/D₂O:



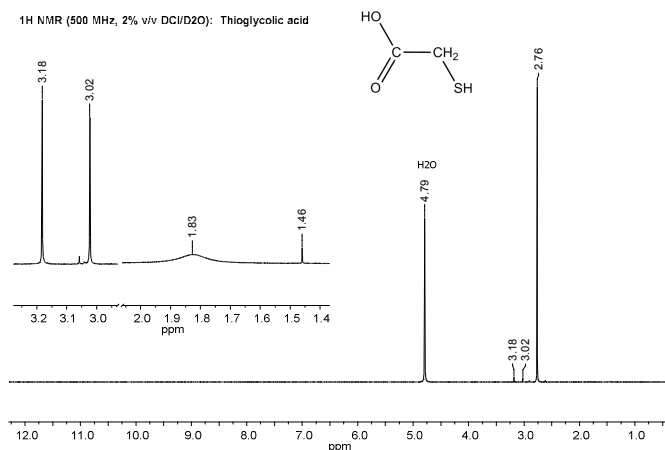
¹H NMR spectrum of thioglycolic acid in CDCl₃:



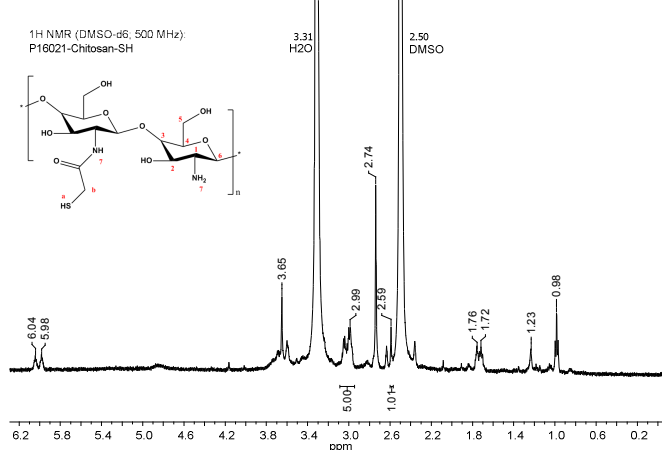
¹H NMR spectrum of thioglycolic acid in D₂O:



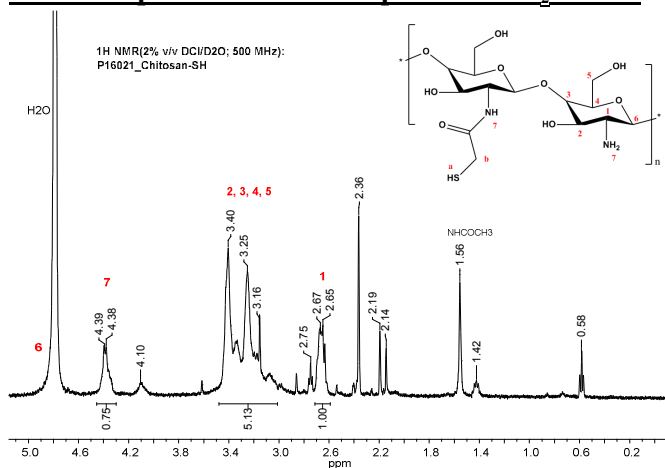
^1H NMR spectrum of thioglycolic acid in $\text{DCI}/\text{D}_2\text{O}$:



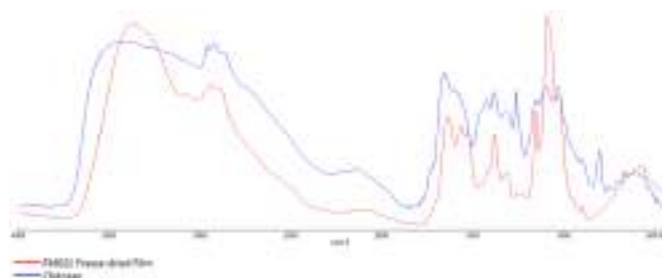
^1H NMR spectrum of P16021 product in $\text{DMSO}-d_6$:



^1H NMR spectrum of P16021 product in $\text{D}_2\text{O}/\text{DCI}$:



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



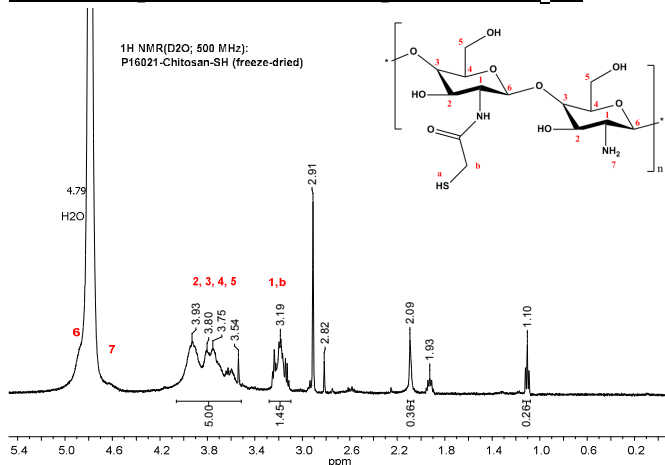
Elemental analyses of native chitosan and P16021:

Identification de l'échantillon:	CHITOSAN
Formule moléculaire:	$\text{C}_6\text{H}_{11}\text{N}\text{O}_4$
Méthode utilisée:	160531E

Elemental Analysis for $\text{C}_6\text{H}_{11}\text{NO}_4$
C: 44.72; H: 6.88; N: 8.69; O: 39.71

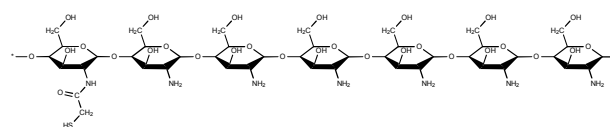
Sample Name	% Nitrogen	% Carbon	% Hydrogen
POL1-1	7.41	41.14	6.88
POL1-2	7.31	41.12	6.88
Moyenne	7.36	41.13	6.88
Théorie:	8.70	44.70	6.90

^1H NMR spectrum of P16021 product in D_2O :



Identification de l'échantillon:	P16021
Formule moléculaire:	$\text{C}_8\text{H}_{13}\text{N}\text{O}_5\text{S}$
Méthode utilisée:	160001E

Sample Name	% Nitrogen	% Carbon	% Hydrogen	% Sulphur
POL3-1	6.96	35.61	6.44	2.78
POL3-2	6.90	36.34	6.71	2.78
Moyenne	6.93	35.97	6.57	2.78
Théorie:	5.90	40.80	5.60	13.60



Chemical Formula: $\text{C}_{44}\text{H}_{79}\text{N}_7\text{O}_{29}\text{S}_2$
Elemental Analysis: C, 43.96; H, 6.62; N, 8.16; O, 38.59; S, 2.67