

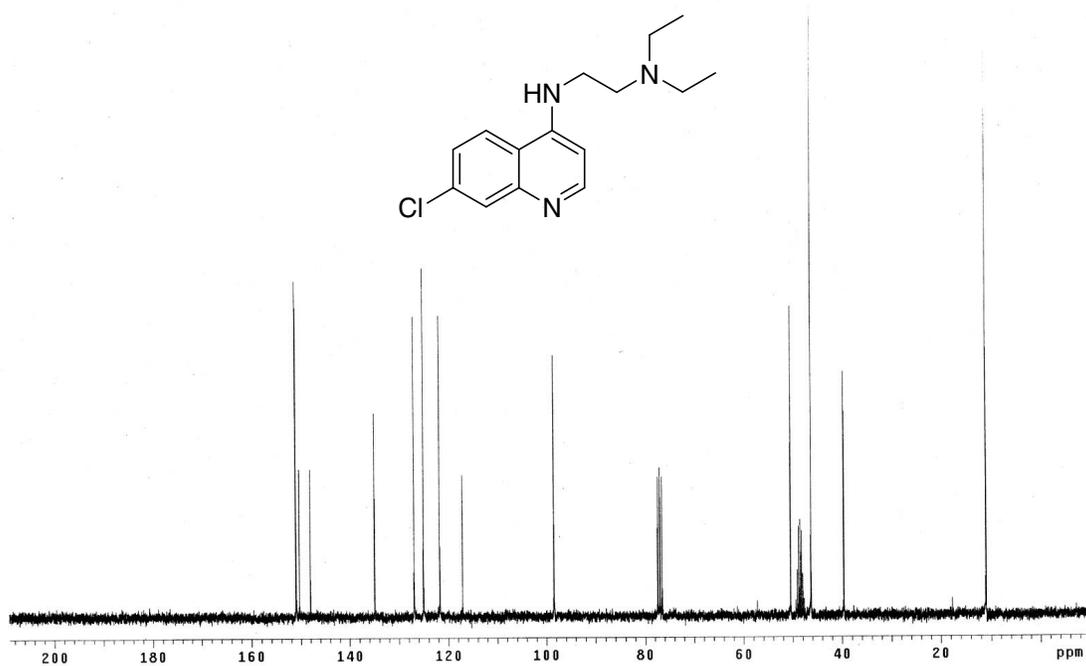
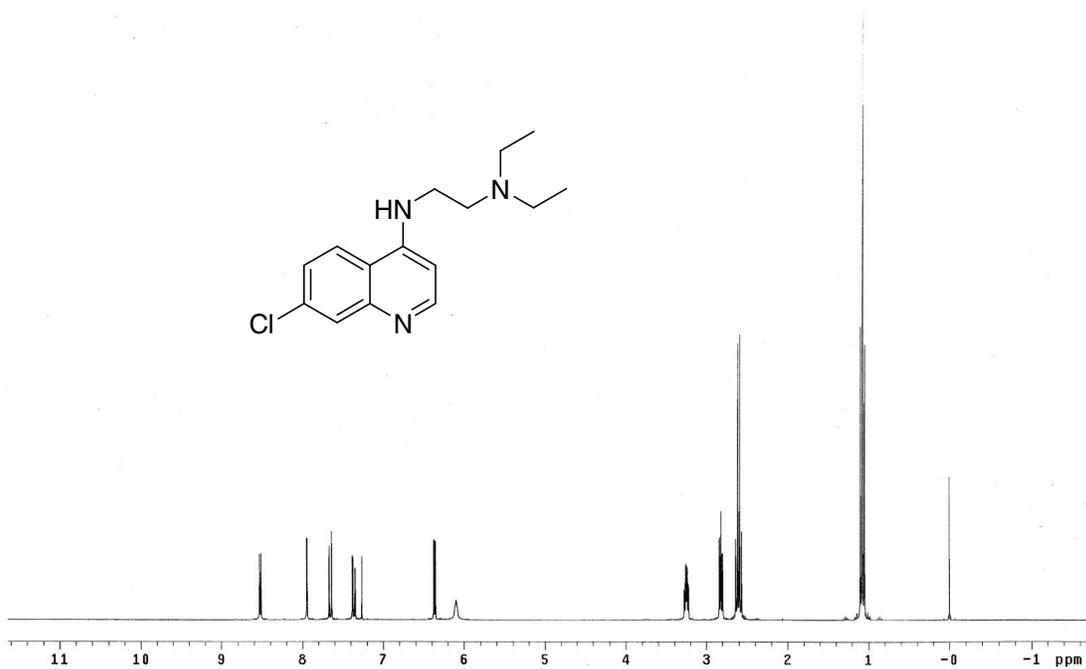
**4-N, 4-S & 4-O Chloroquine Analogues: Influence of Side  
Chain Length and Quinolyl Nitrogen pKa on Activity vs.  
Chloroquine Resistant Malaria<sup>+</sup>**

**SUPPORTING INFORMATION: (<sup>1</sup>H-NMR, HPLC, and C18  
column data for synthesized compounds)**

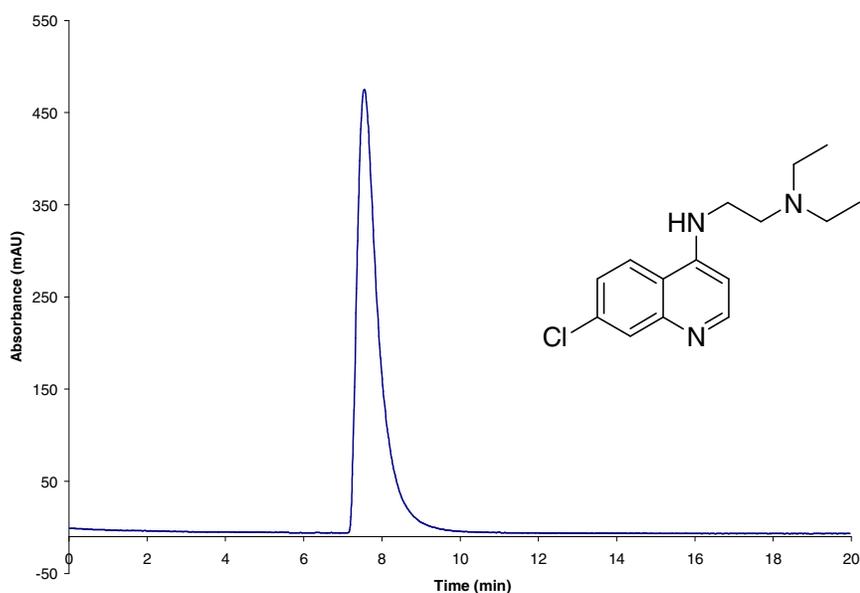
Natarajan, Jayakumar K.<sup>1,2</sup>, Alumasa, John<sup>1</sup>, Yearick, Kimberly<sup>1</sup>, Ekoue-Kovi, Kekeli  
A.<sup>1</sup>, Casabianca, Leah B.<sup>1</sup>, de Dios, Angel C.<sup>1,3</sup>, Wolf, Christian<sup>1,3</sup> & Roepe, Paul D.<sup>1,2,3</sup>\*

Dept. of Chemistry<sup>1</sup>, Dept. of Biochemistry and Cellular & Molecular Biology<sup>2</sup>, and  
Center for Infectious Disease<sup>3</sup>, Georgetown University  
37<sup>th</sup> and O Streets, Washington, DC

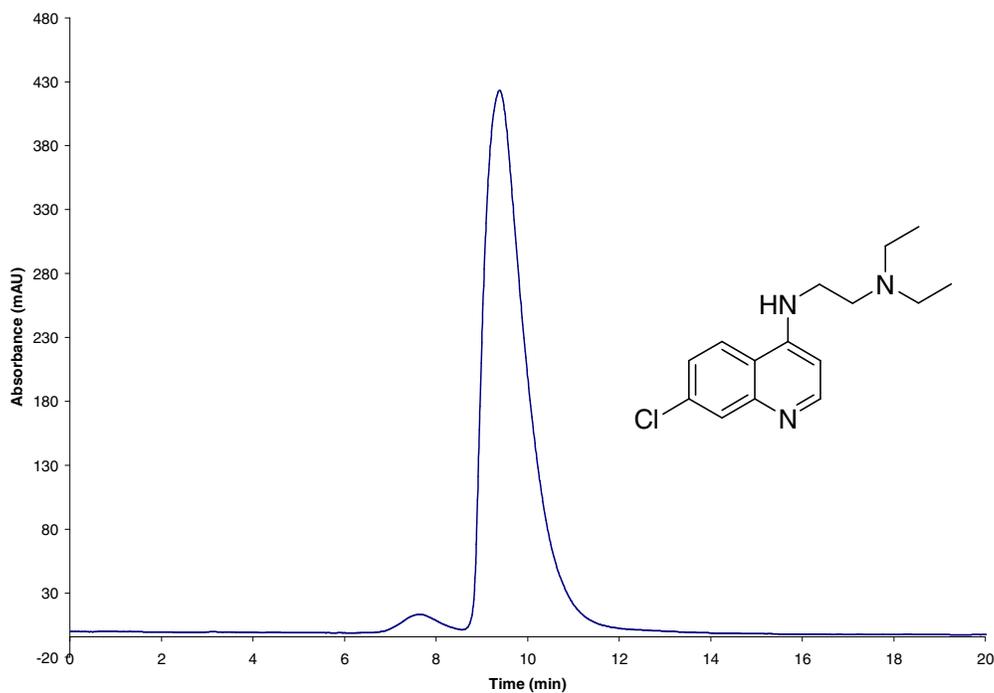
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *N*-(7-chloro-4-quinolyl)-*N,N'*-diethyl-1,2-diaminoethane



## HPLC analysis of *N*-(7-chloro-4-quinolyl)-*N*',*N*'-diethyl-1,2-diaminoethane

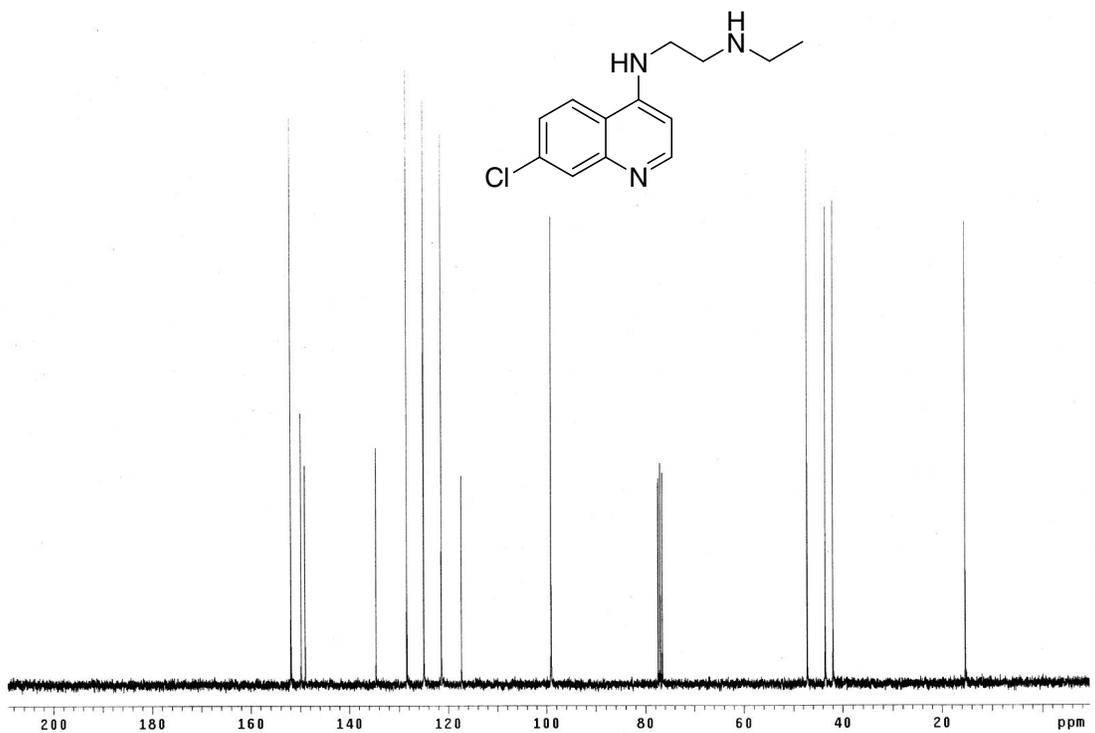
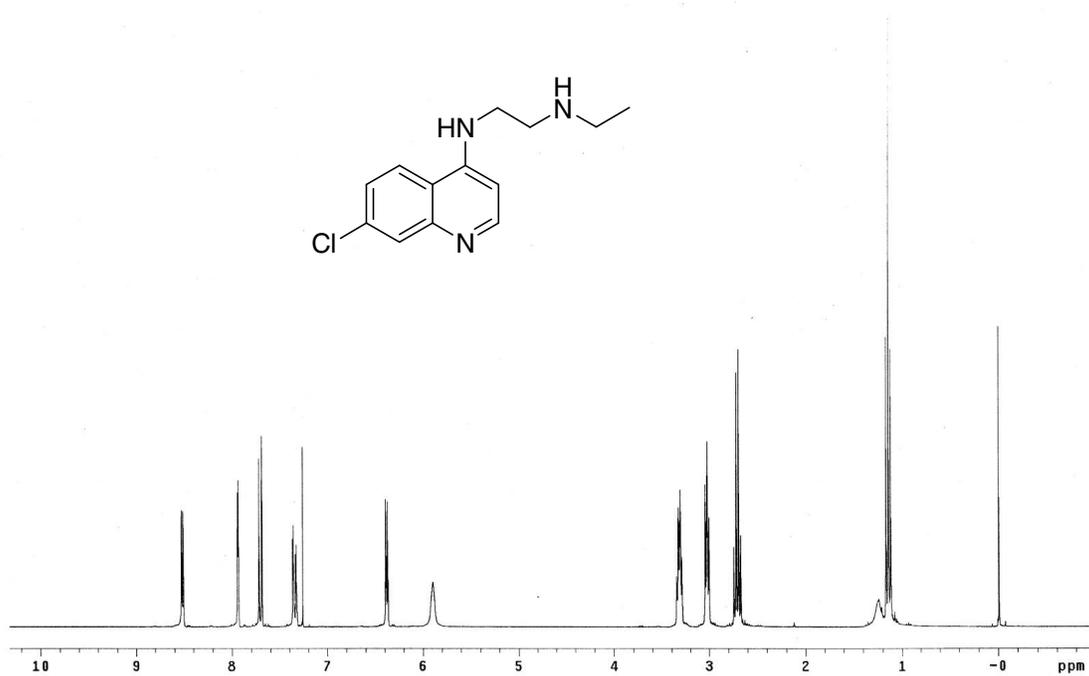


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 2  $\mu$ L, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

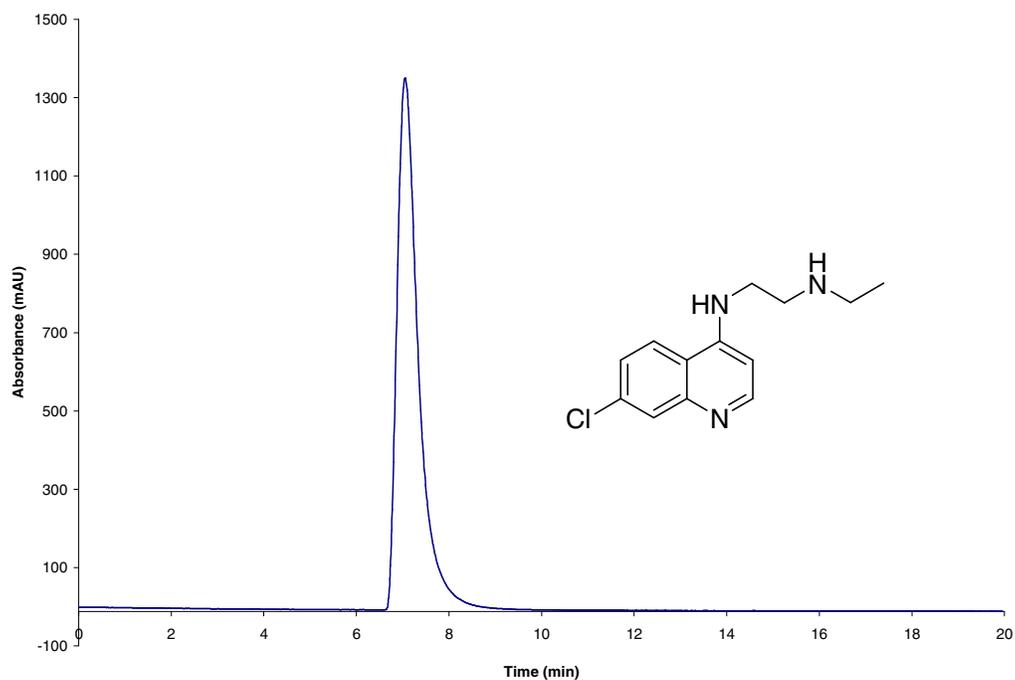


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ L, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

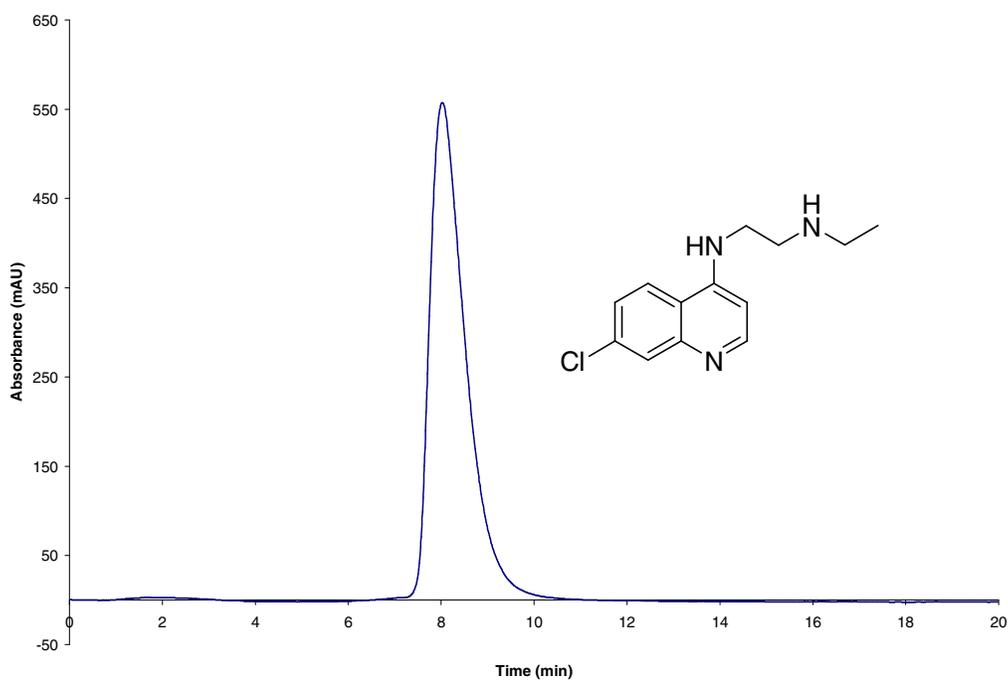
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *N*-(7-chloro-4-quinolyl)-*N'*-ethyl-1,2-diaminoethane



## HPLC analysis of *N*-(7-chloro-4-quinolyl)-*N'*-ethyl-1,2-diaminoethane

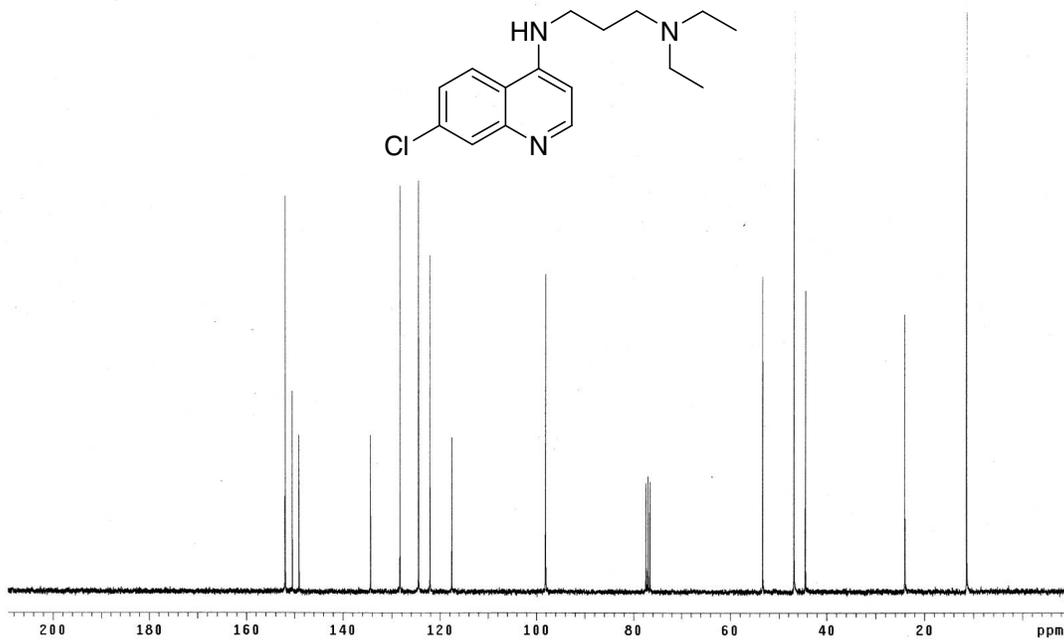
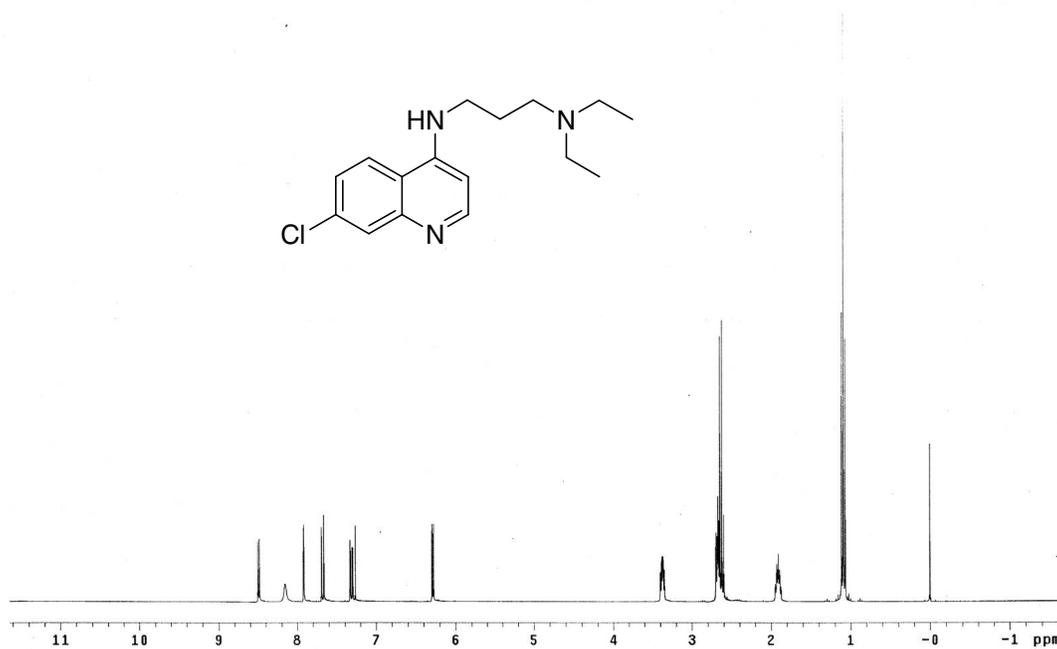


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ L, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

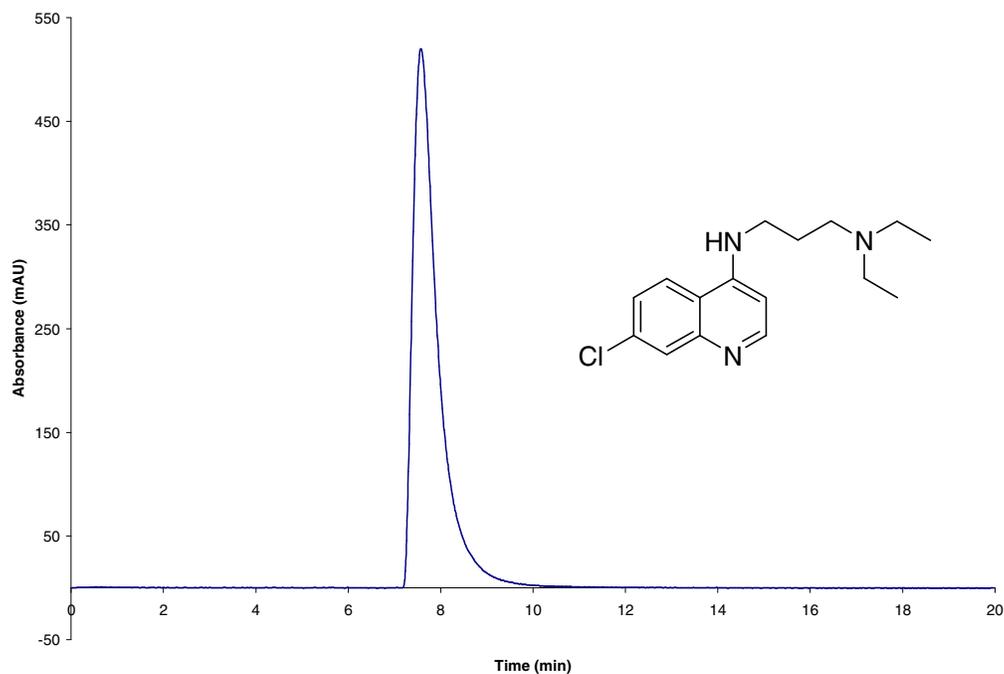


Conditions: Nucleosil NH<sub>2</sub> column (Alltech applied science), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ L, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

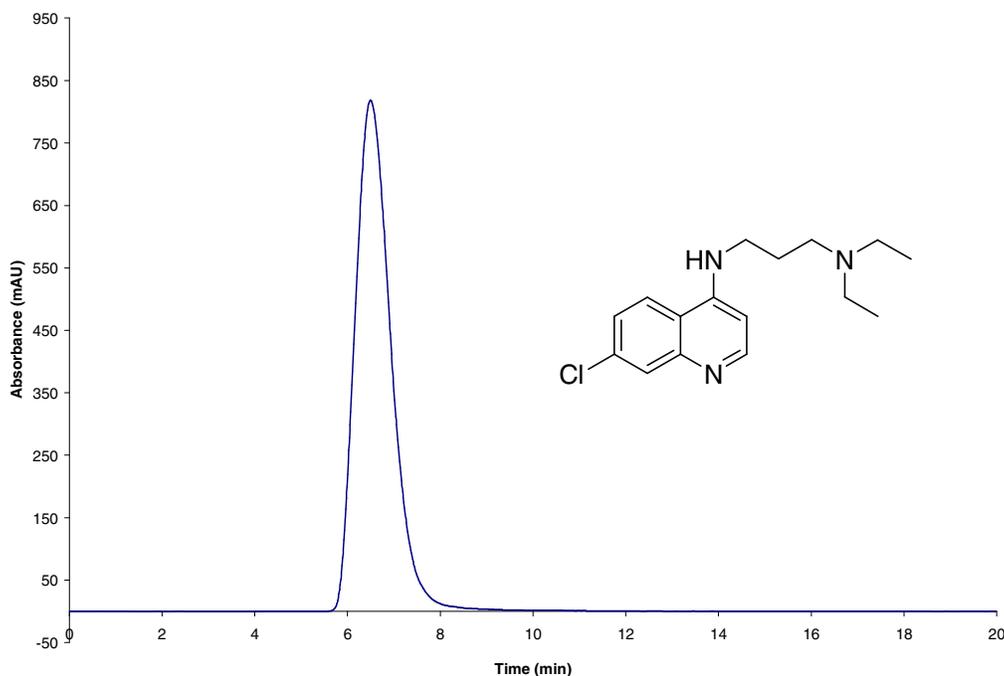
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *N*-(7-chloro-4-quinolyl)-*N,N'*-diethyl-1,3-diaminopropane



## HPLC analysis of *N*-(7-chloro-4-quinoly)-*N*',*N*'-diethyl-1,3-diaminopropane

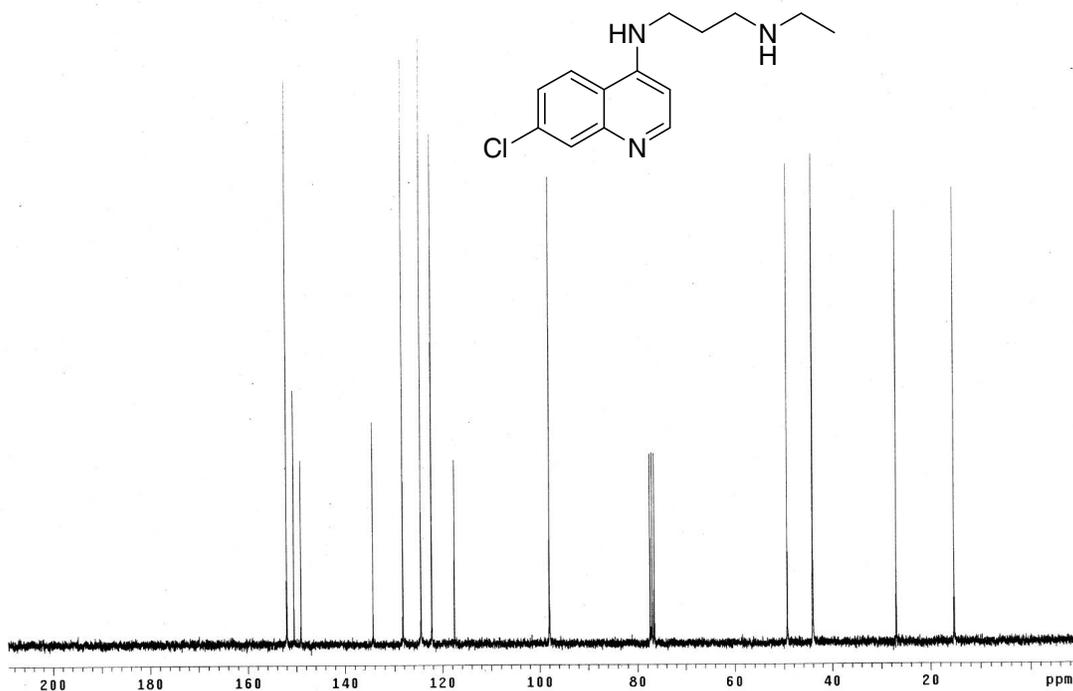
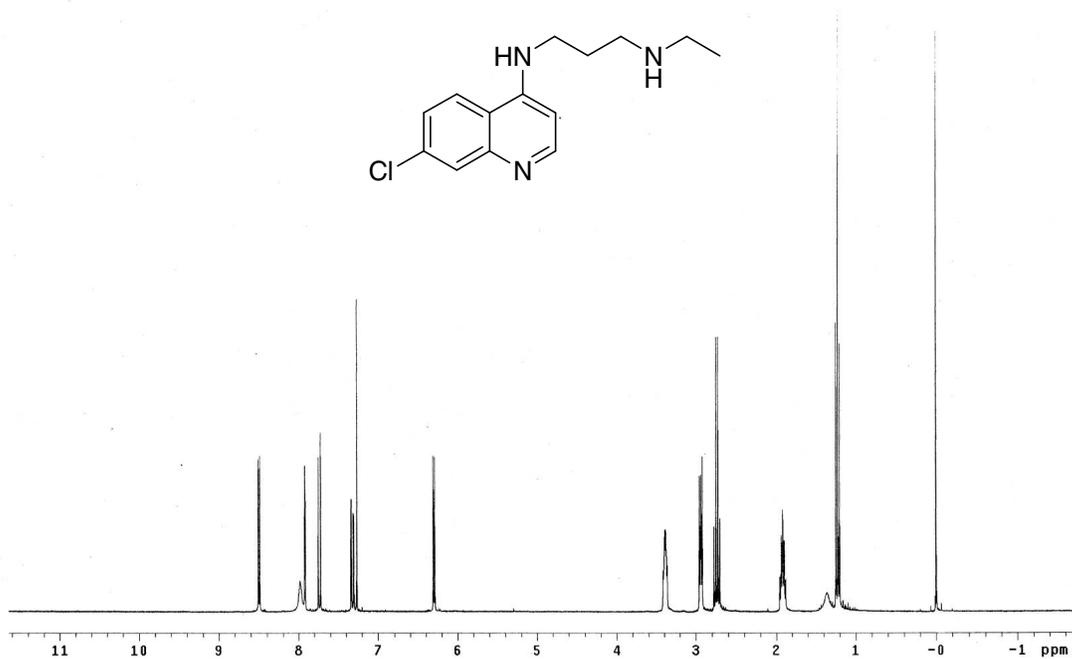


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 2  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

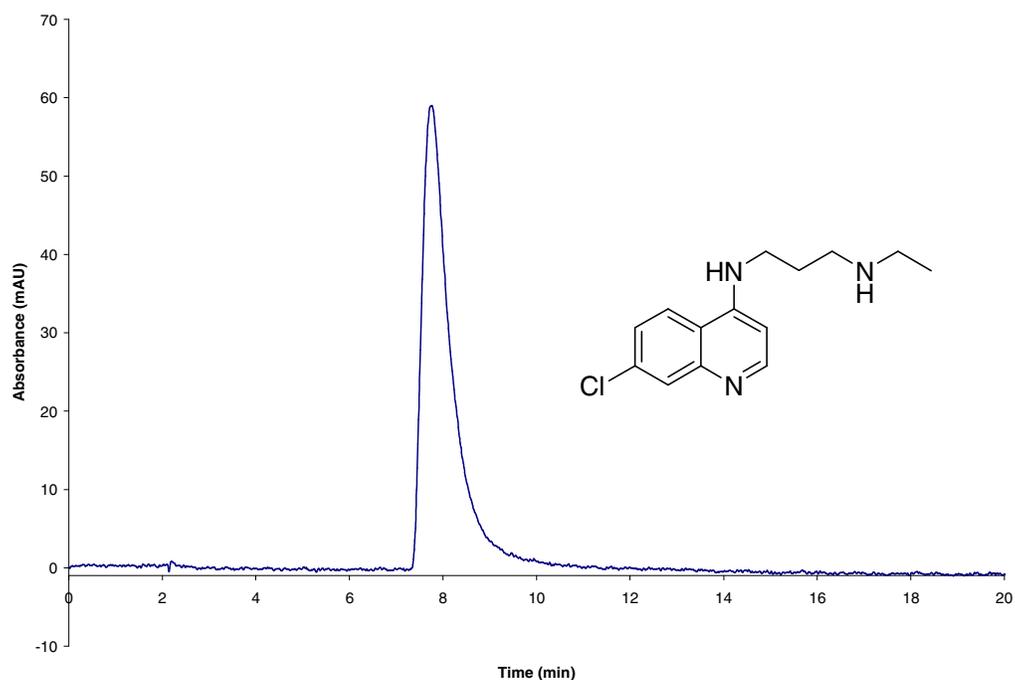


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

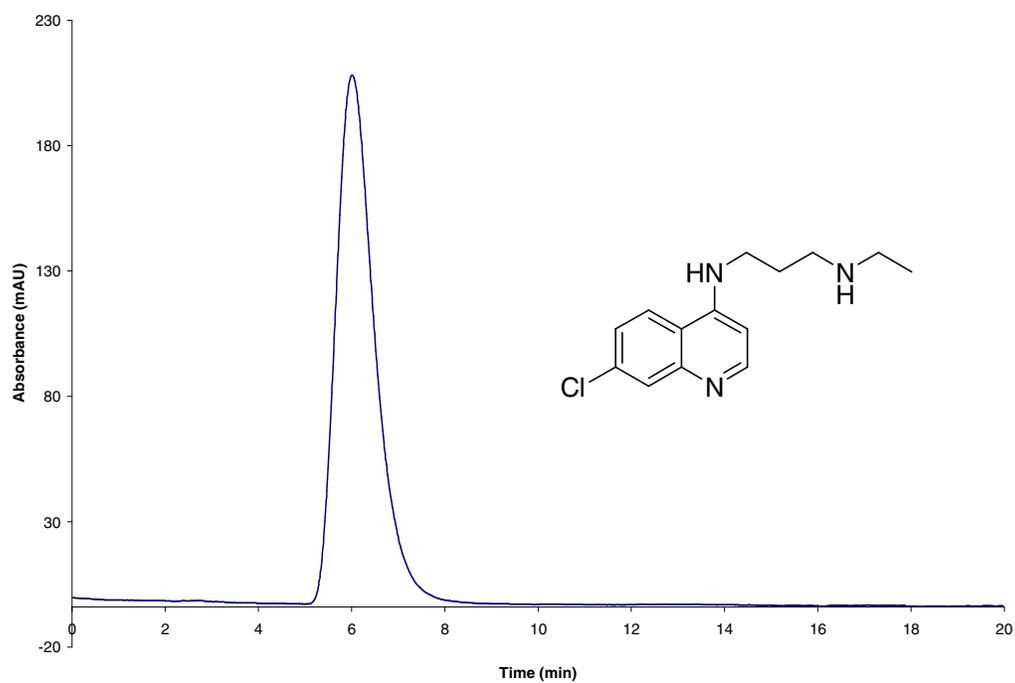
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *N*-(7-chloro-4-quinolyl)-*N'*-ethyl-1,3-diaminopropane



## HPLC analysis of *N*-(7-chloro-4-quinolyl)-*N'*-ethyl-1,3-diaminopropane

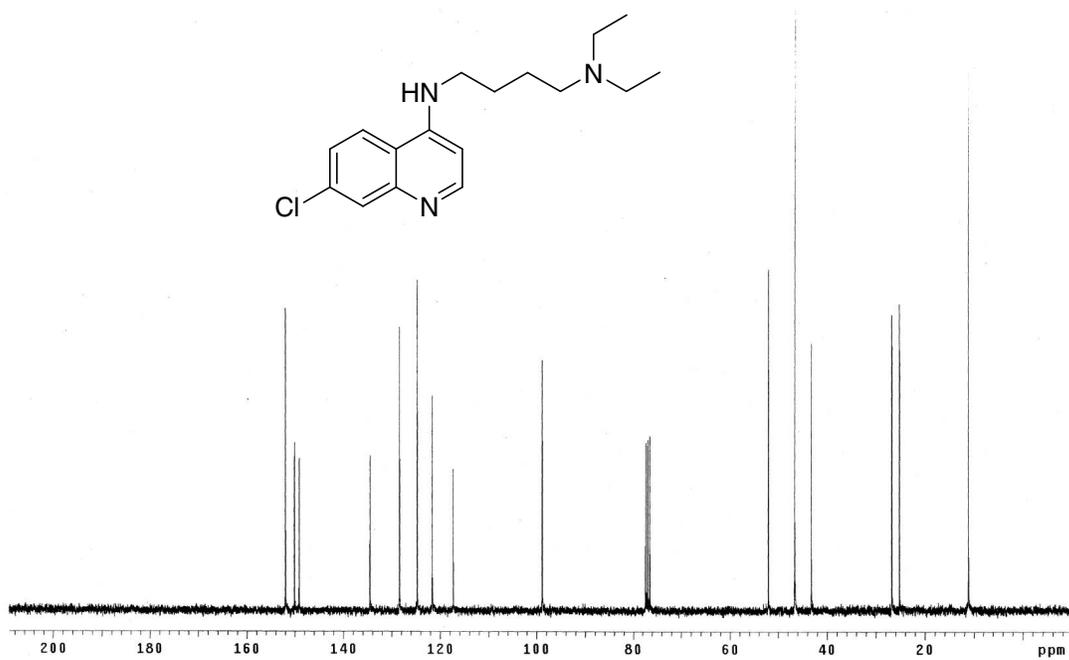
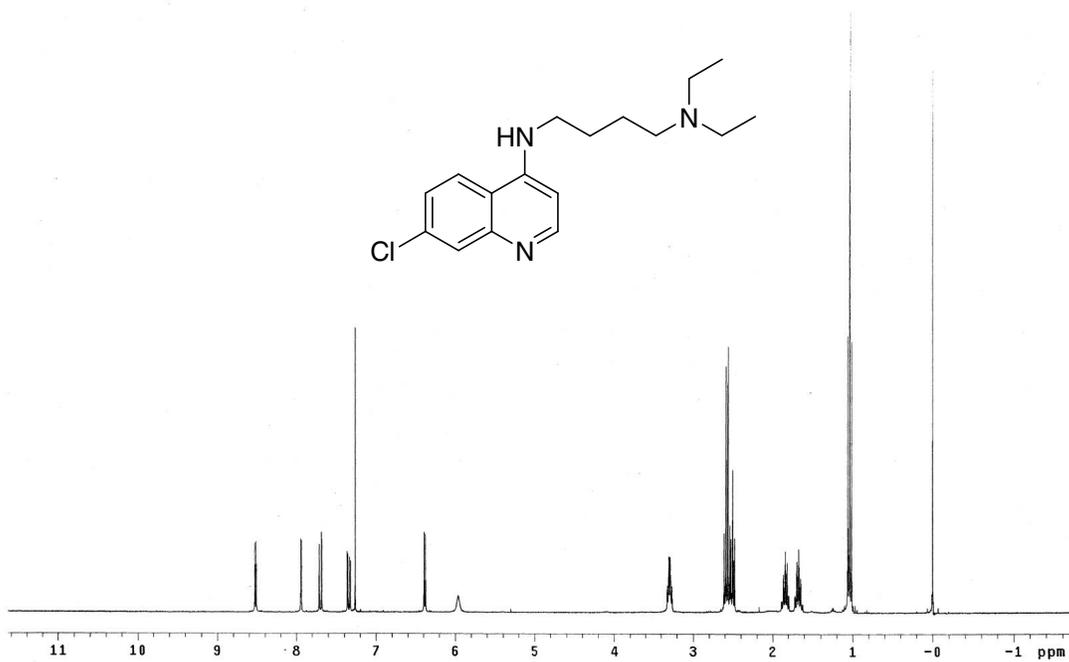


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 2  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

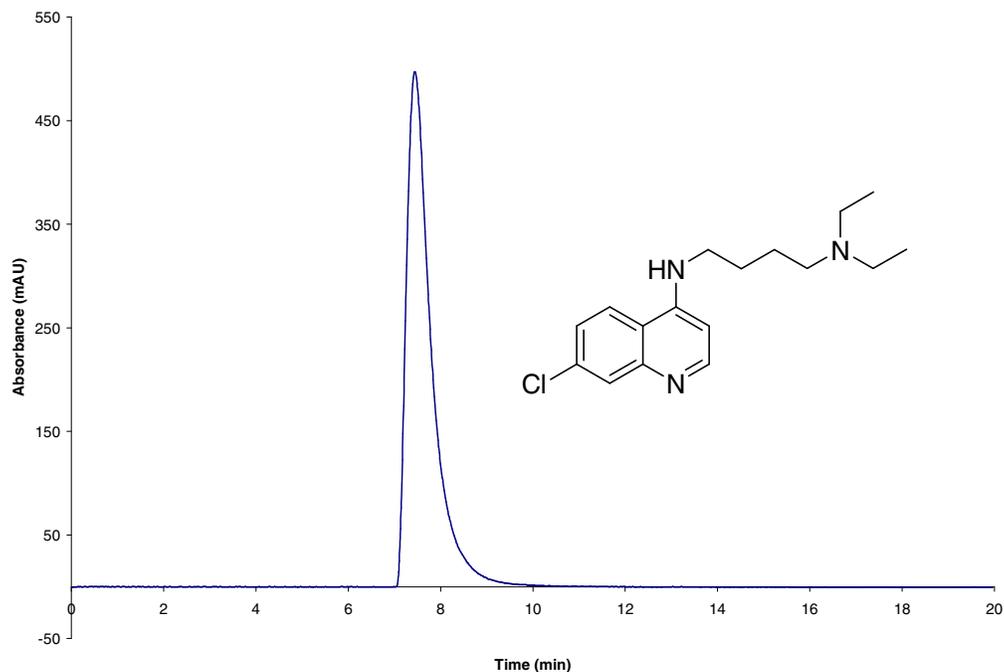


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

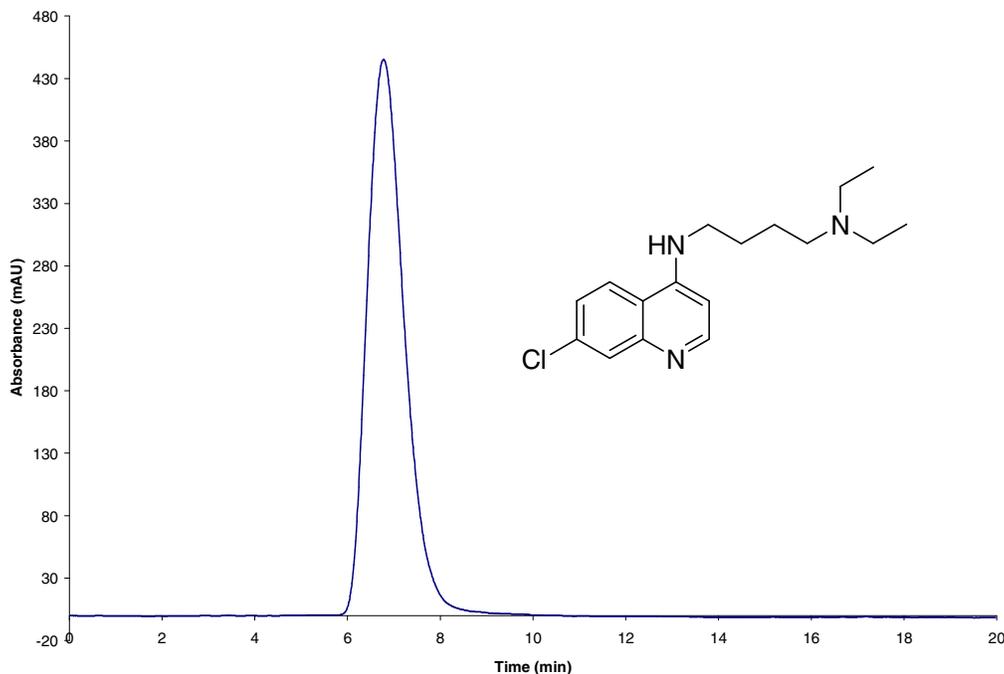
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *N*-(7-chloro-4-quinolyl)-*N,N'*-diethyl-1,4-diaminobutane



HPLC analysis of *N*-(7-chloro-4-quinolyyl)-*N*',*N*'-diethyl-1,4-diaminobutane

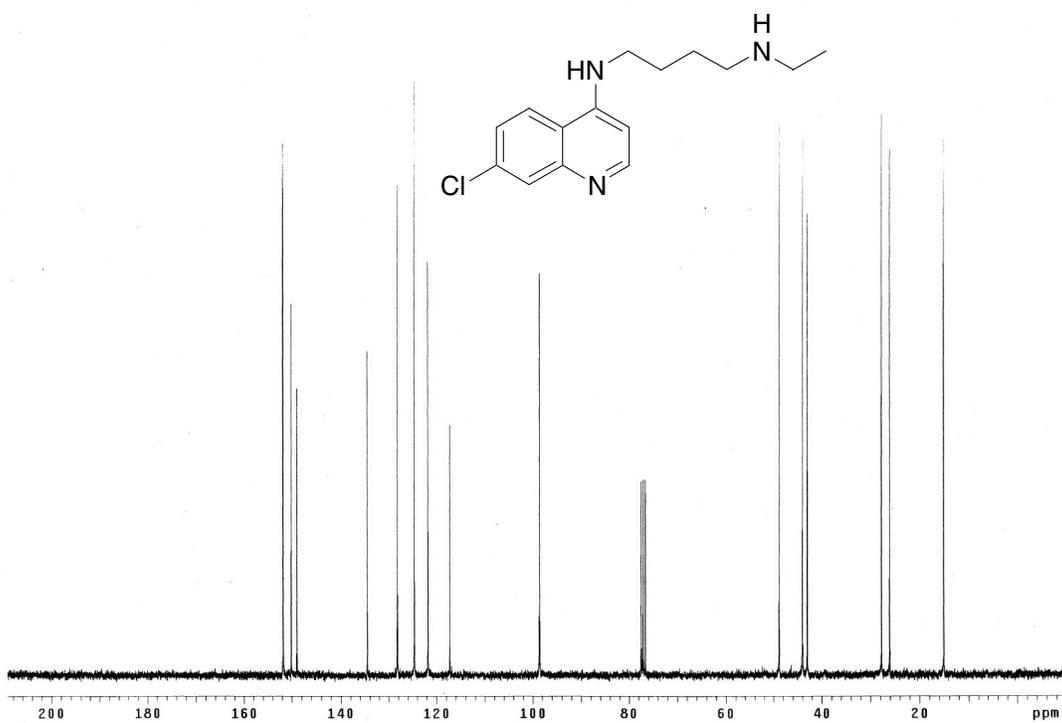
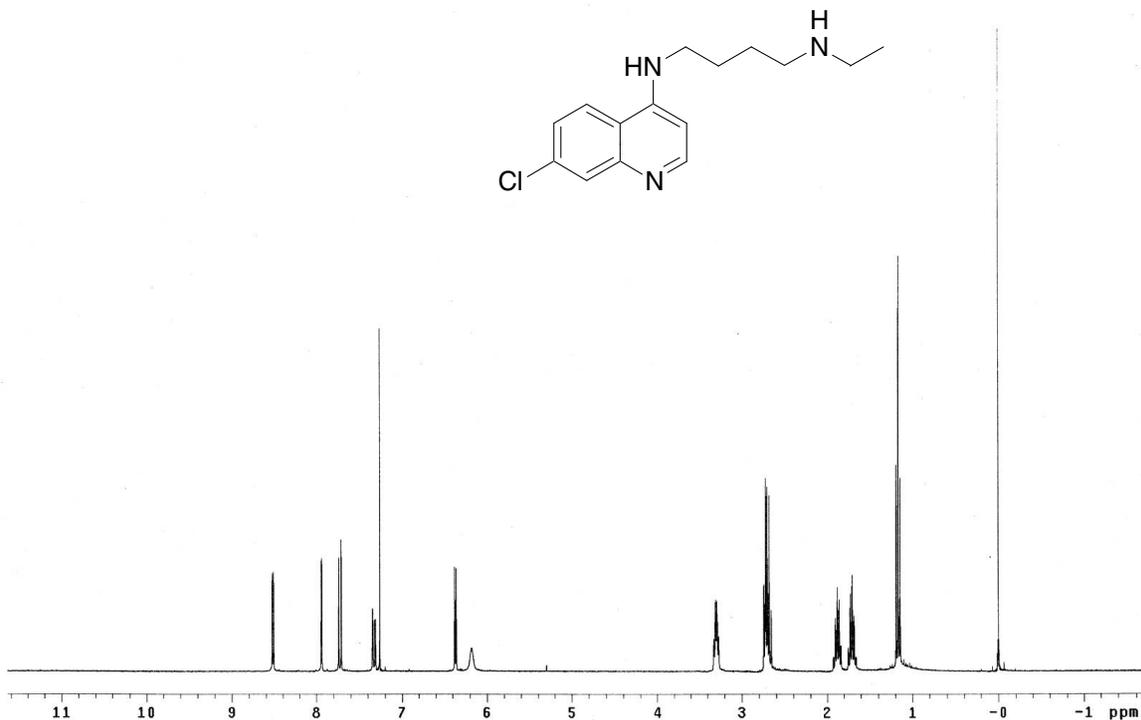


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 2  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

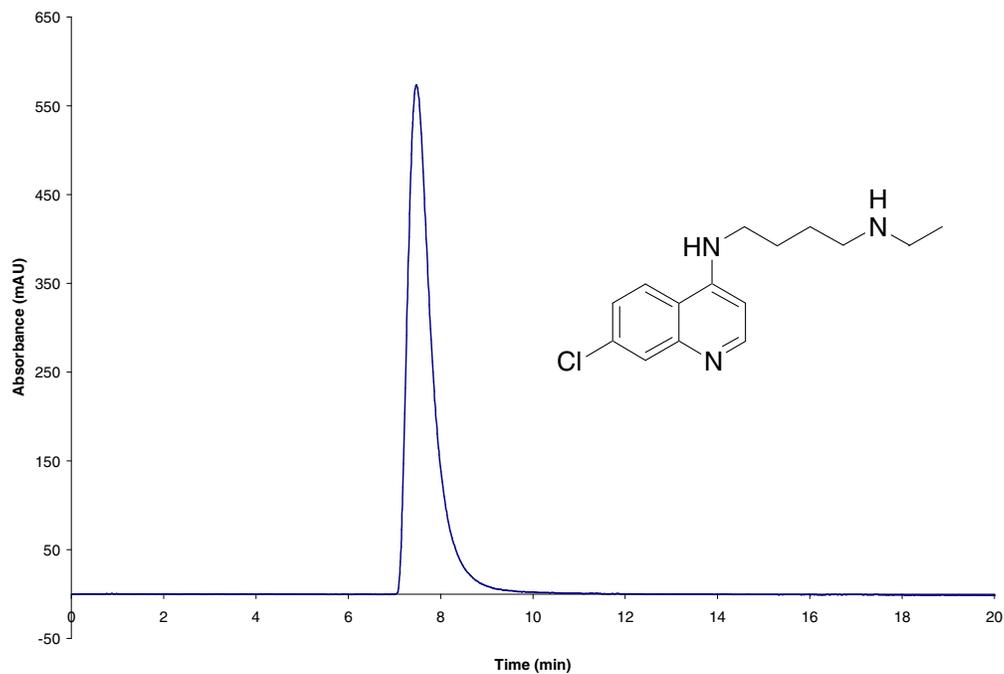


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

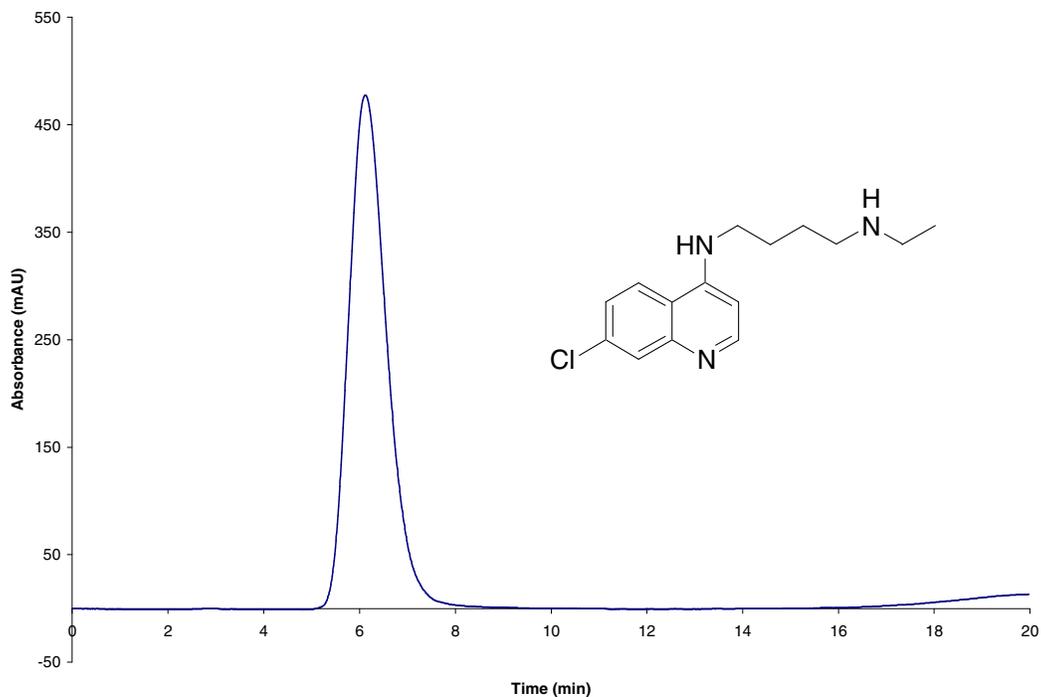
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *N*-(7-chloro-4-quinolyl)-*N'*-ethyl-1,4-diaminobutane



## HPLC analysis of *N*-(7-chloro-4-quinolyl)-*N'*-ethyl-1,4-diaminobutane

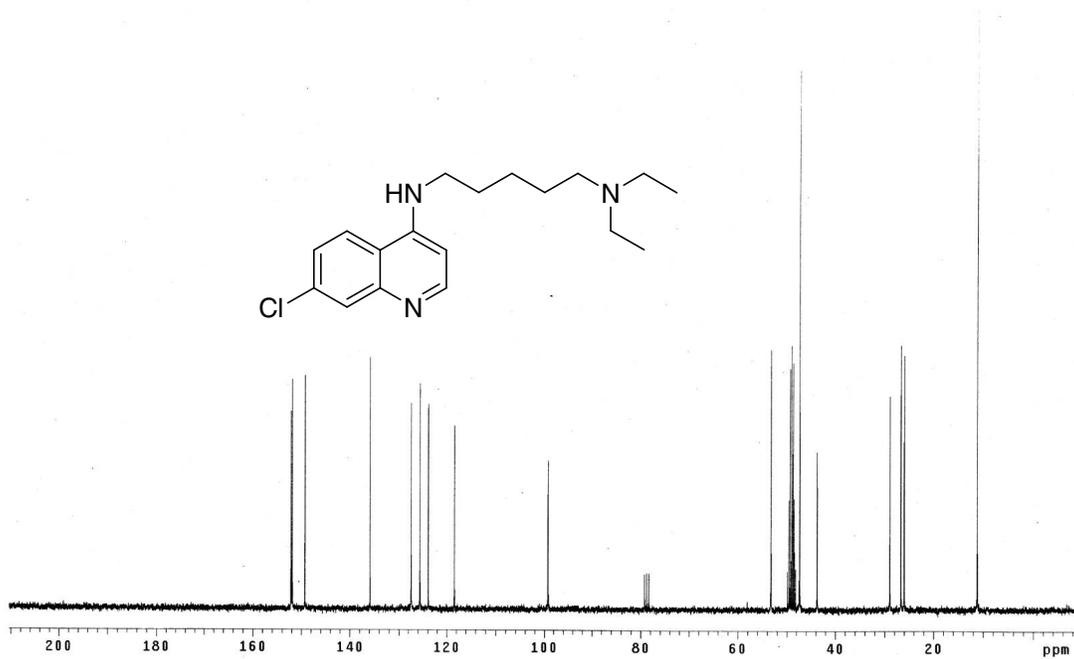
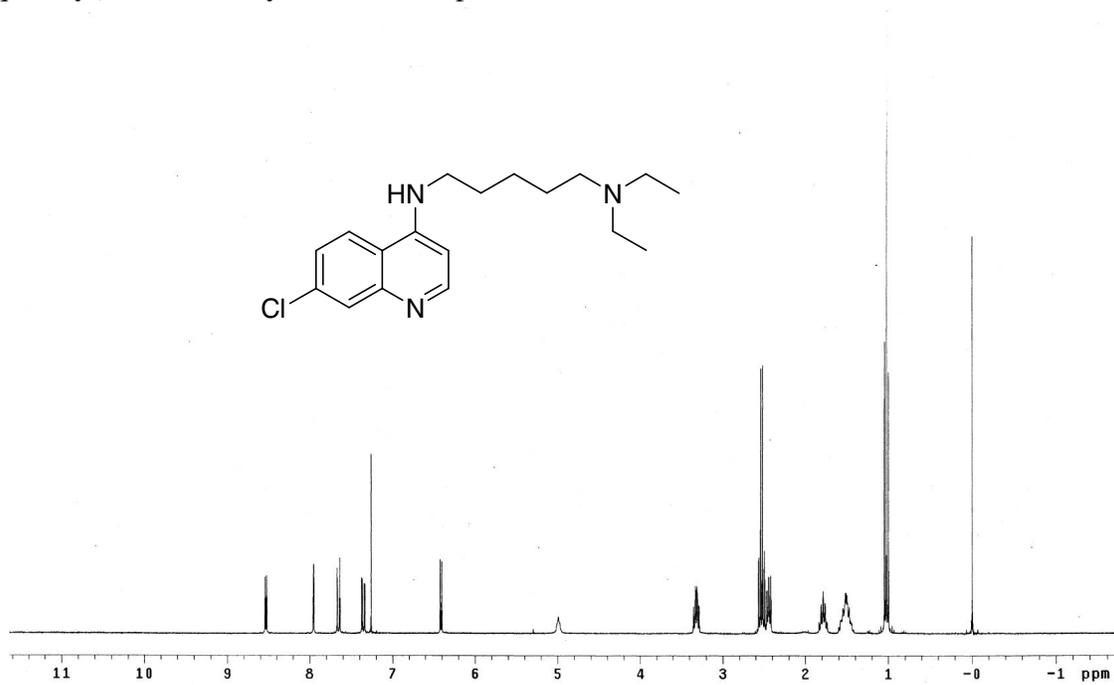


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 2  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

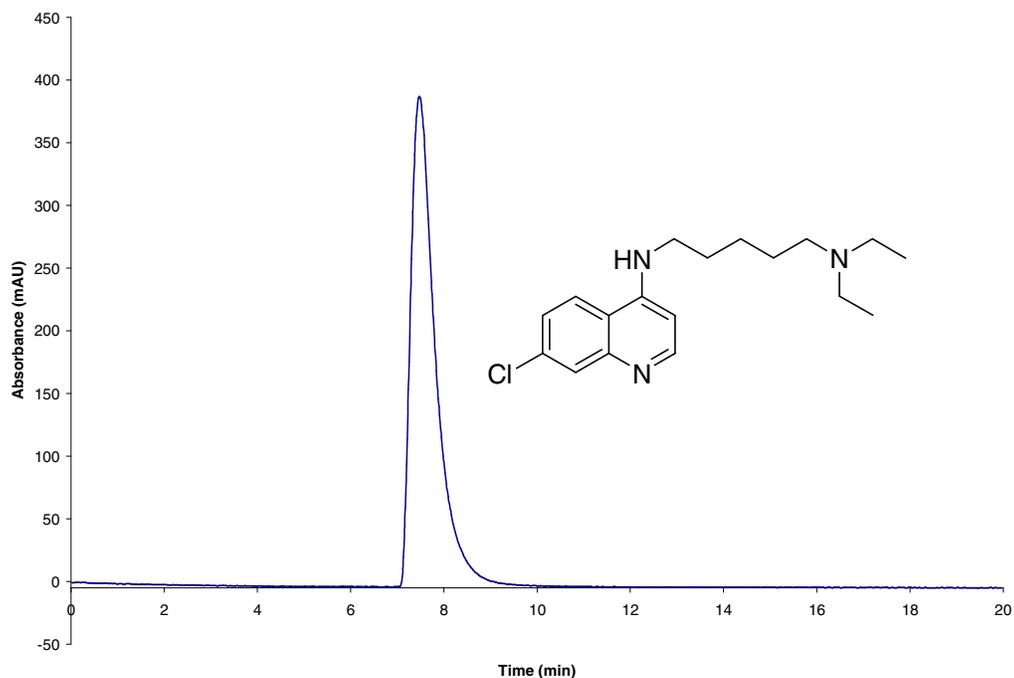


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

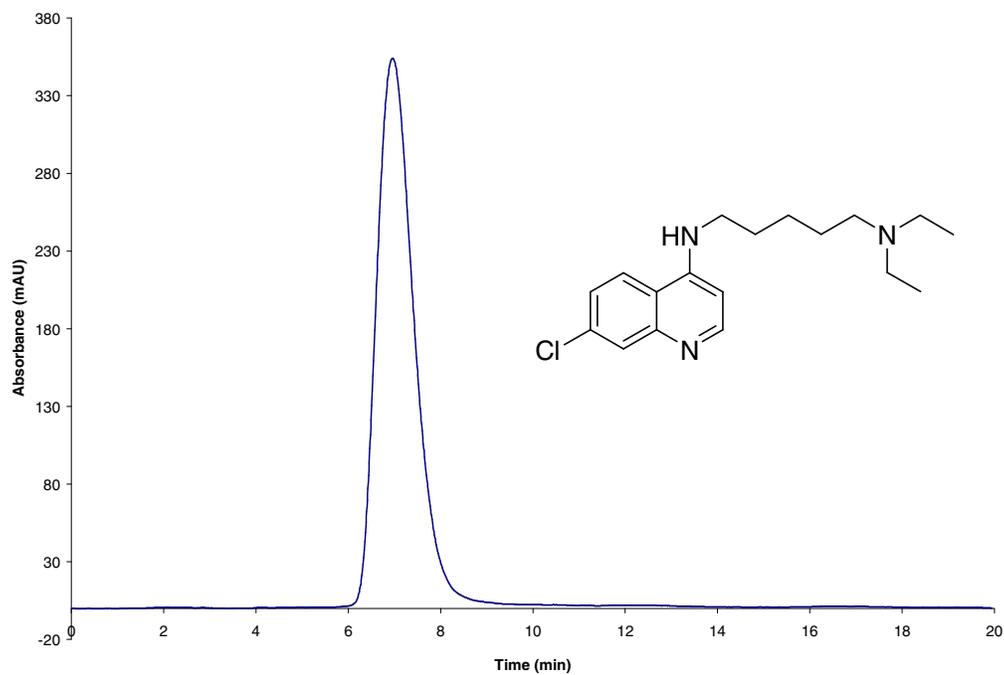
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CD}_3\text{OD}$ ) of *N*-(7-chloro-4-quinolyl)-*N,N'*-diethyl-1,5-diaminopentane



HPLC analysis of *N*-(7-chloro-4-quinolyl)-*N*',*N*'-diethyl-1,5-diaminopentane

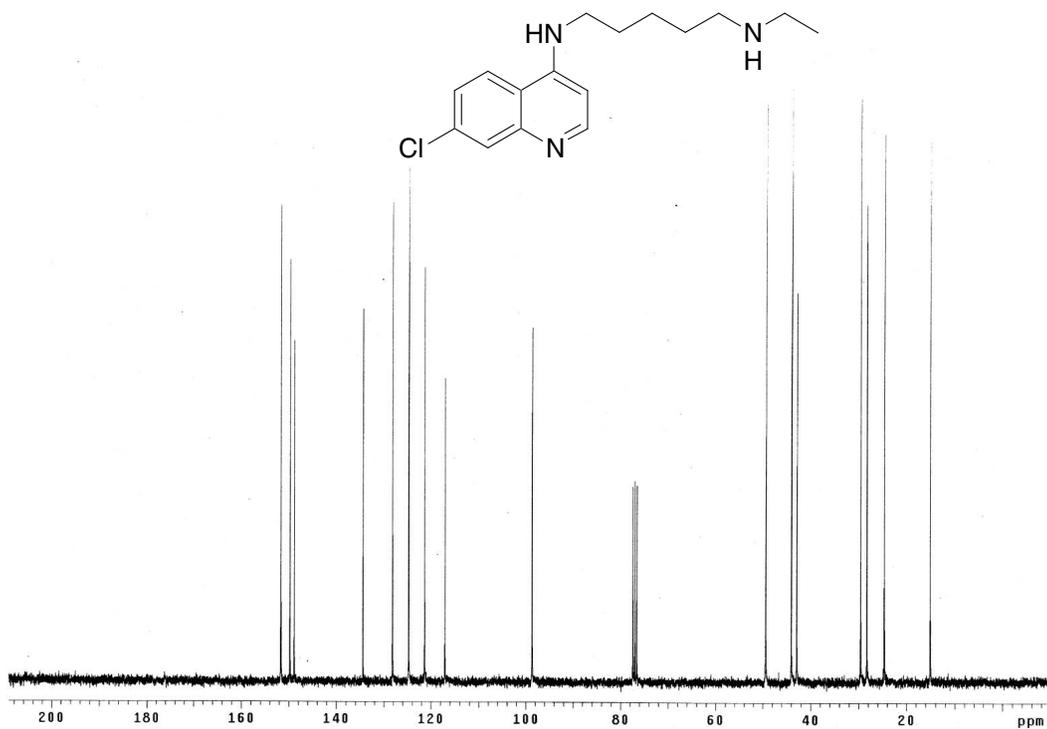
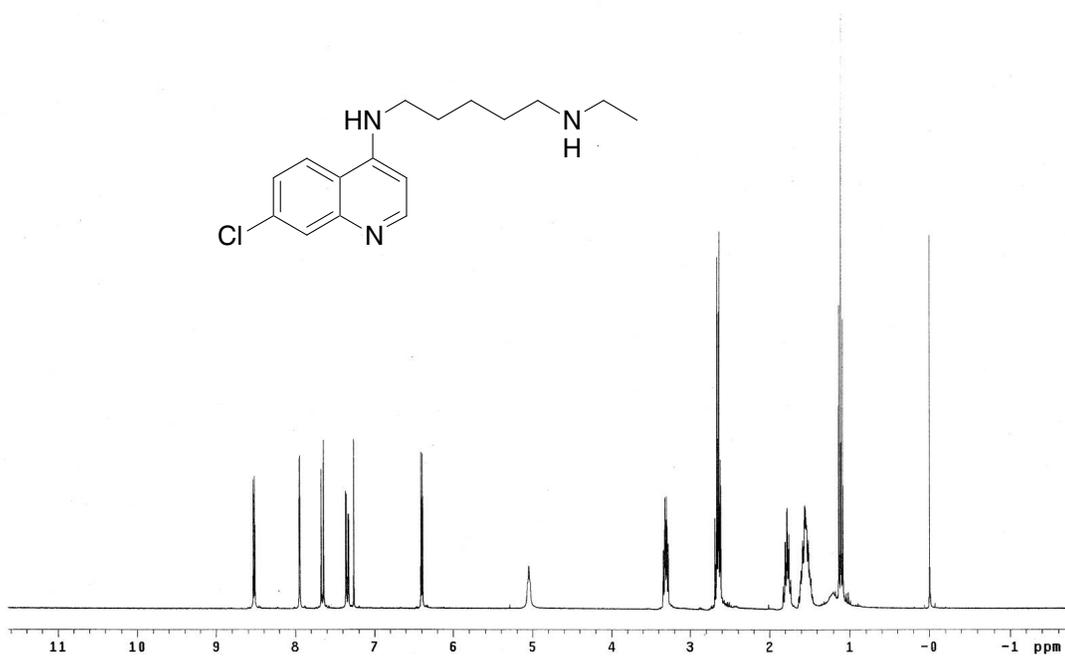


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 2  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

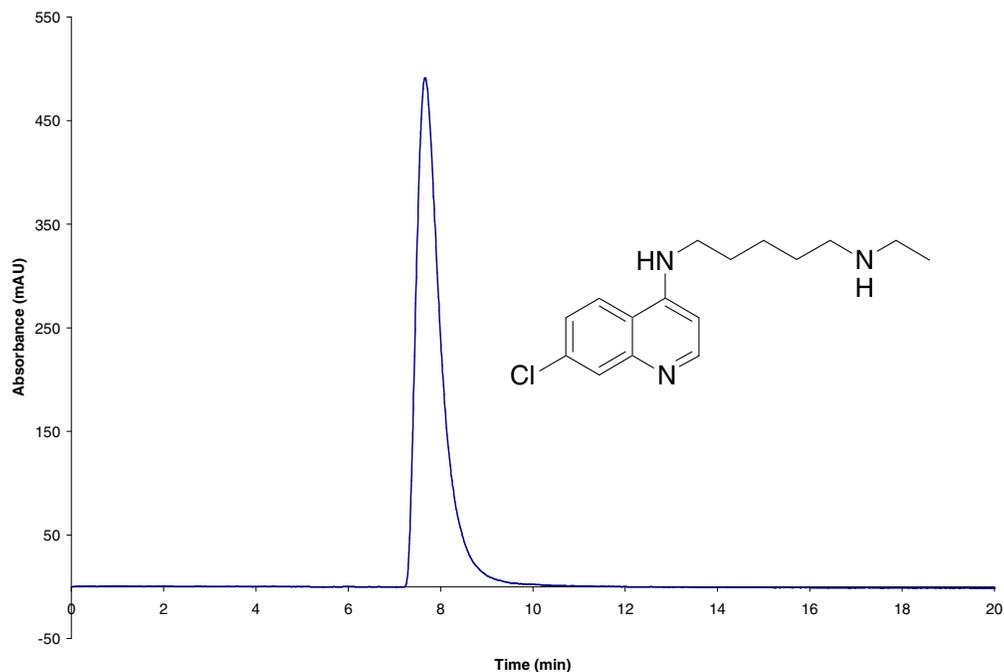


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

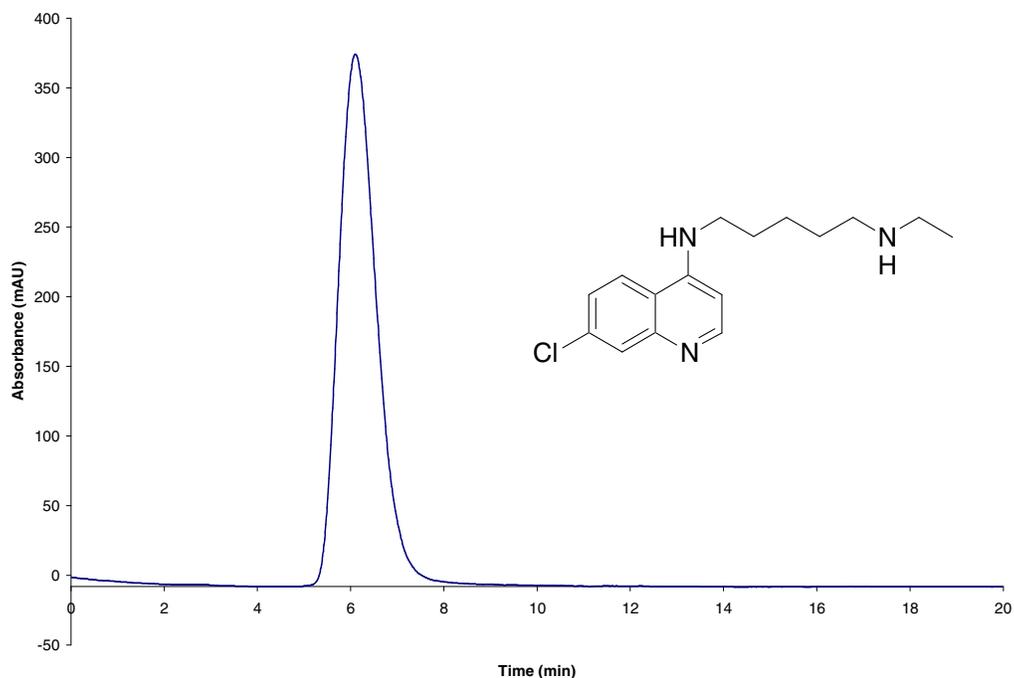
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *N*-(7-chloro-4-quinolyl)-*N'*-ethyl-1,5-diaminopentane



## HPLC analysis of *N*-(7-chloro-4-quinolyl)-*N'*-ethyl-1,5-diaminopentane

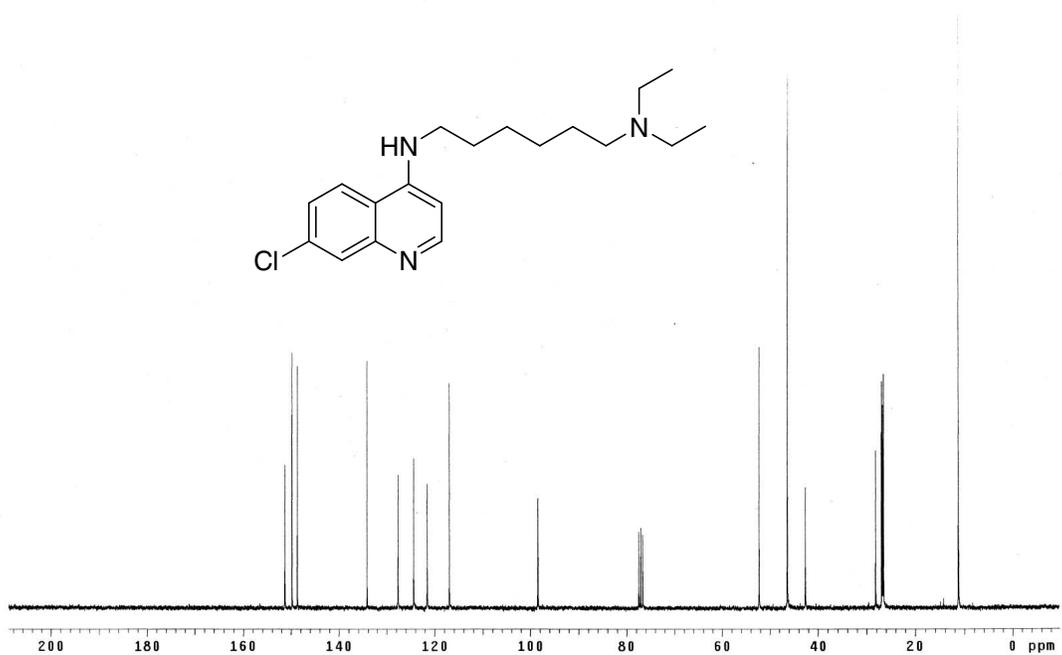
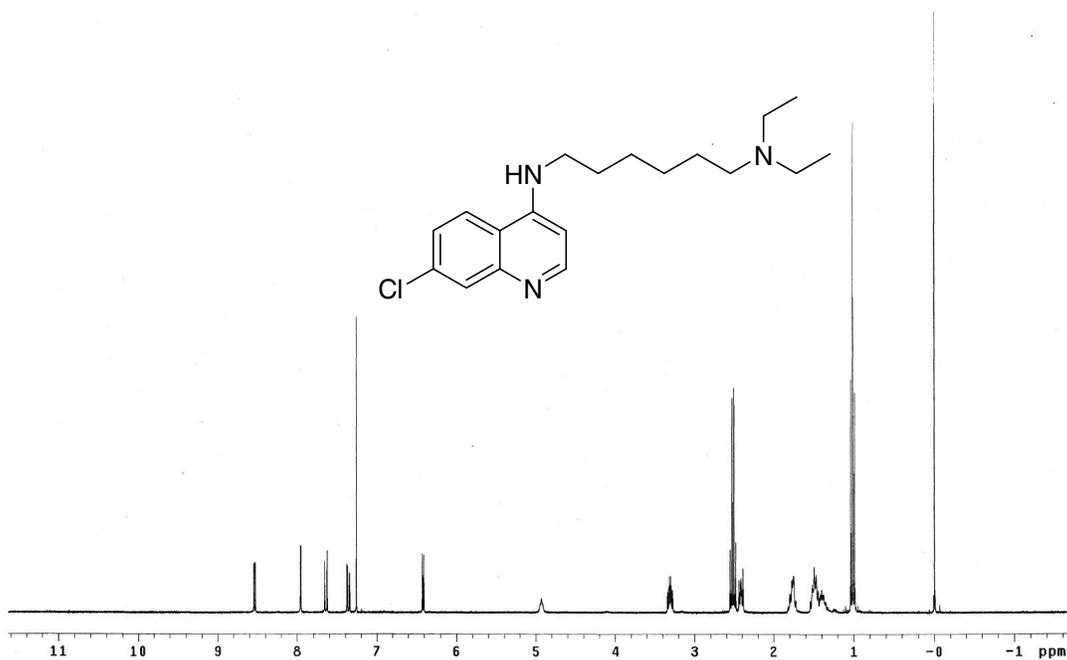


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 2  $\mu$ L, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

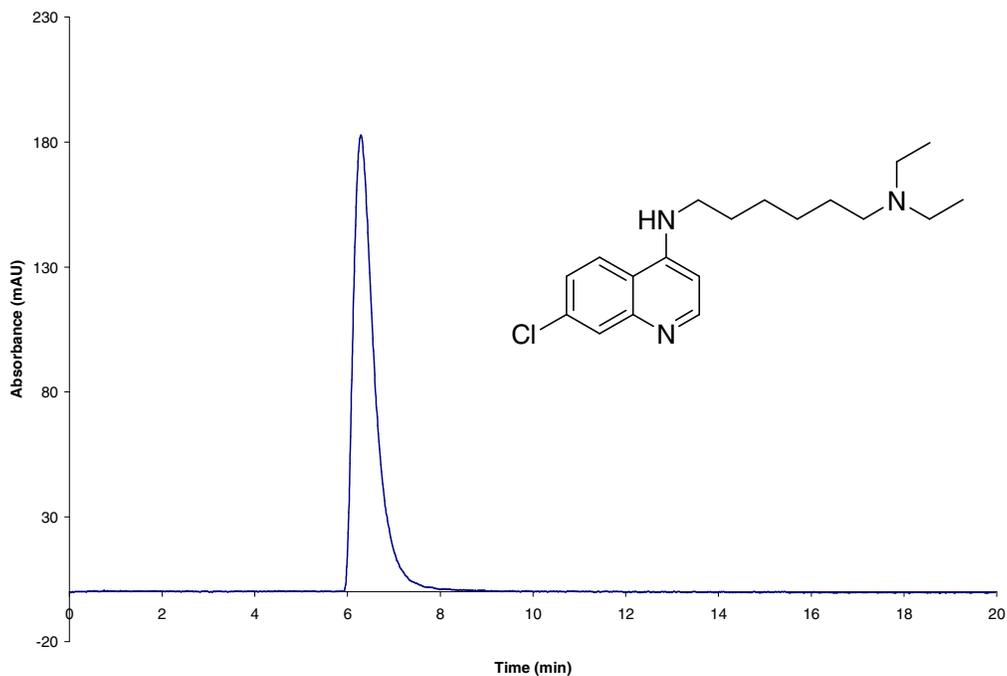


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ L, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

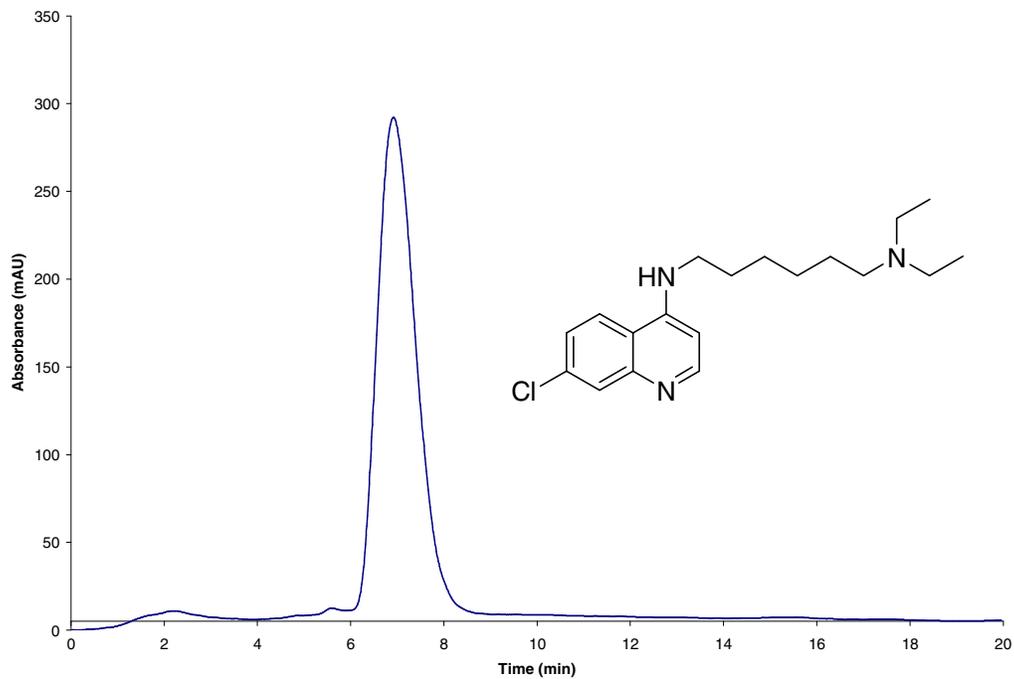
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *N*-(7-chloro-4-quinolyl)-*N',N'*-diethyl-1,6-diaminohexane



HPLC analysis of *N*-(7-chloro-4-quinolyyl)-*N*',*N*'-diethyl-1,6-diaminohexane

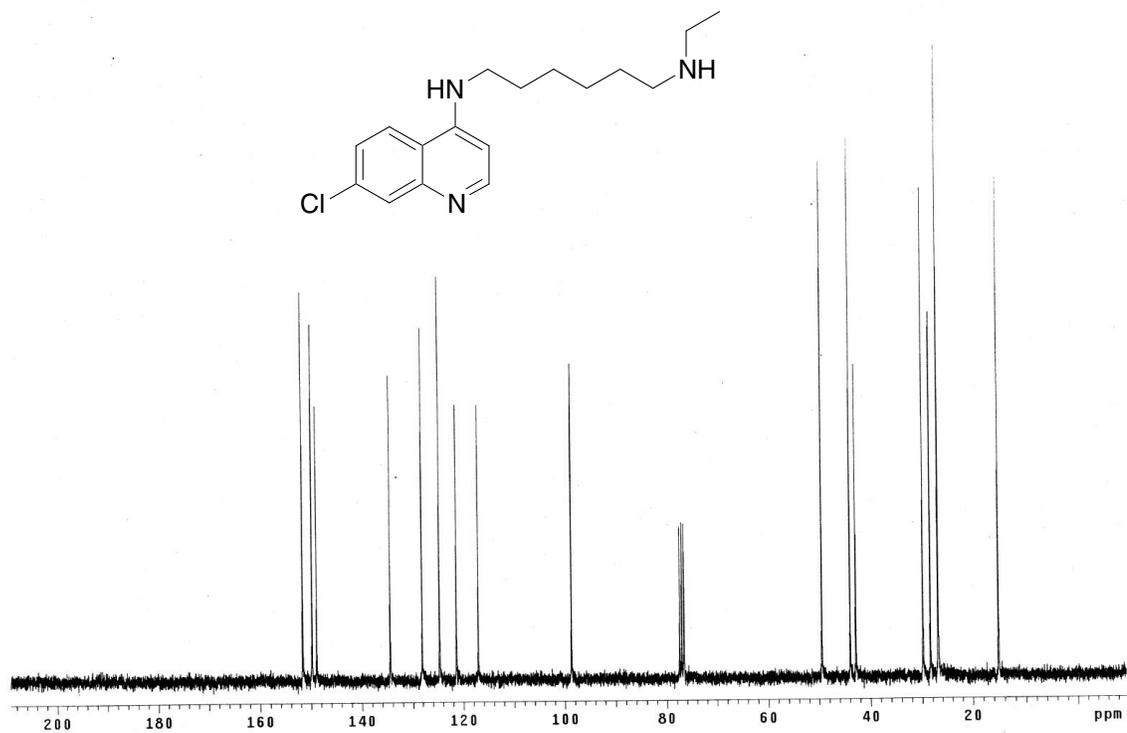
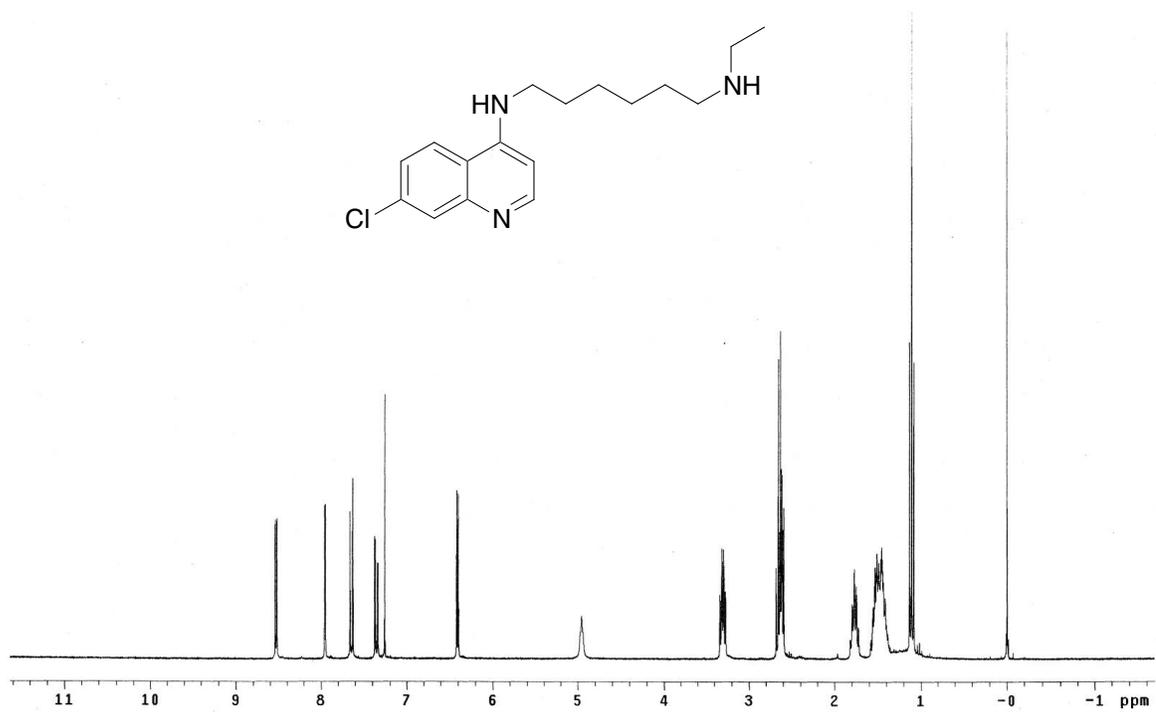


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 10  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

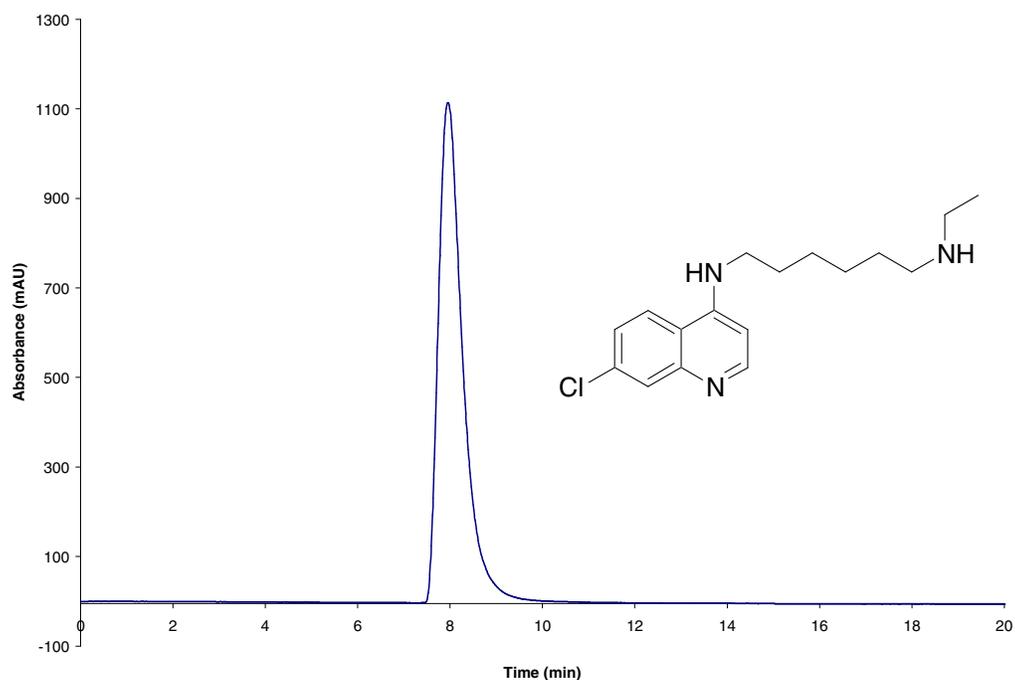


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

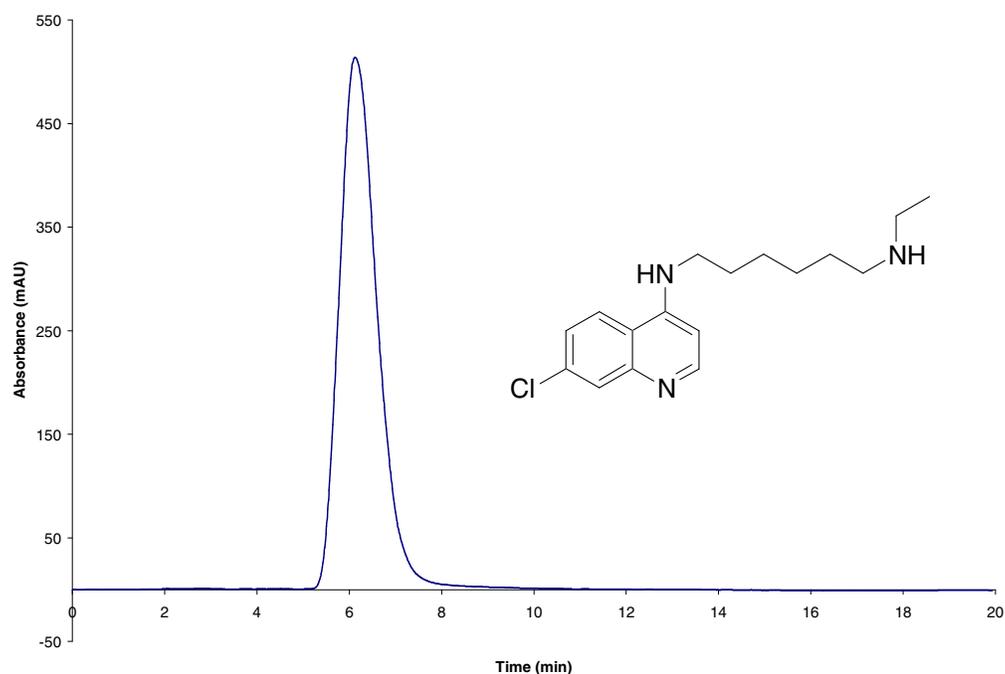
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *N*-(7-chloro-4-quinolyl)-*N'*-ethyl-1,6-diaminohexane



## HPLC analysis of *N*-(7-chloro-4-quinolyl)-*N'*-ethyl-hexane-1,6-diamine

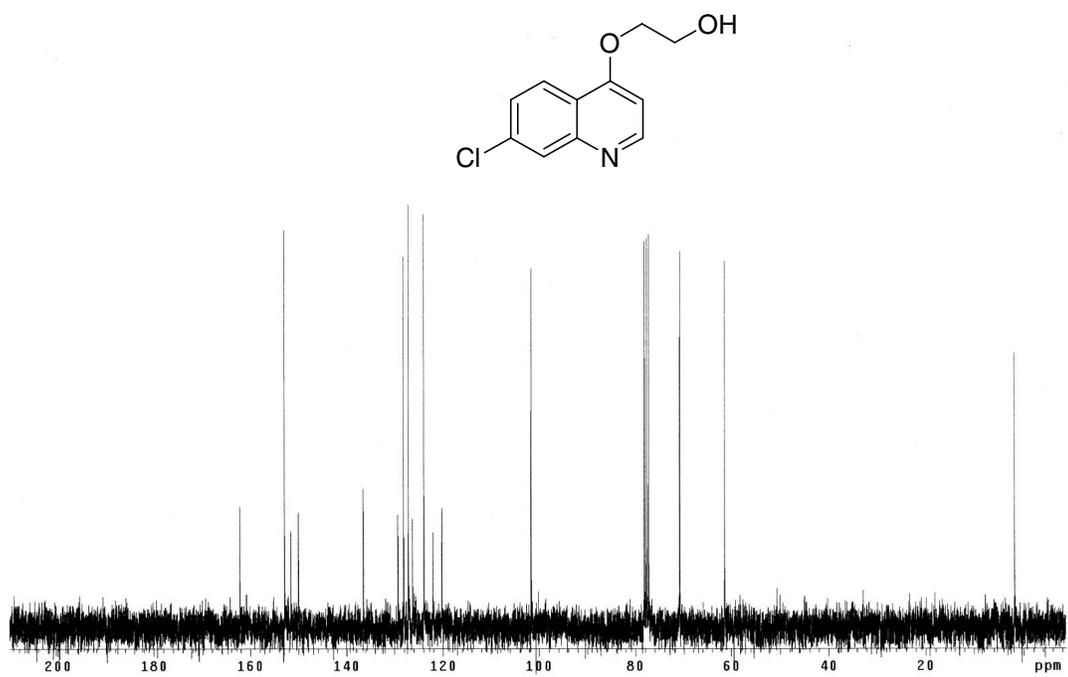
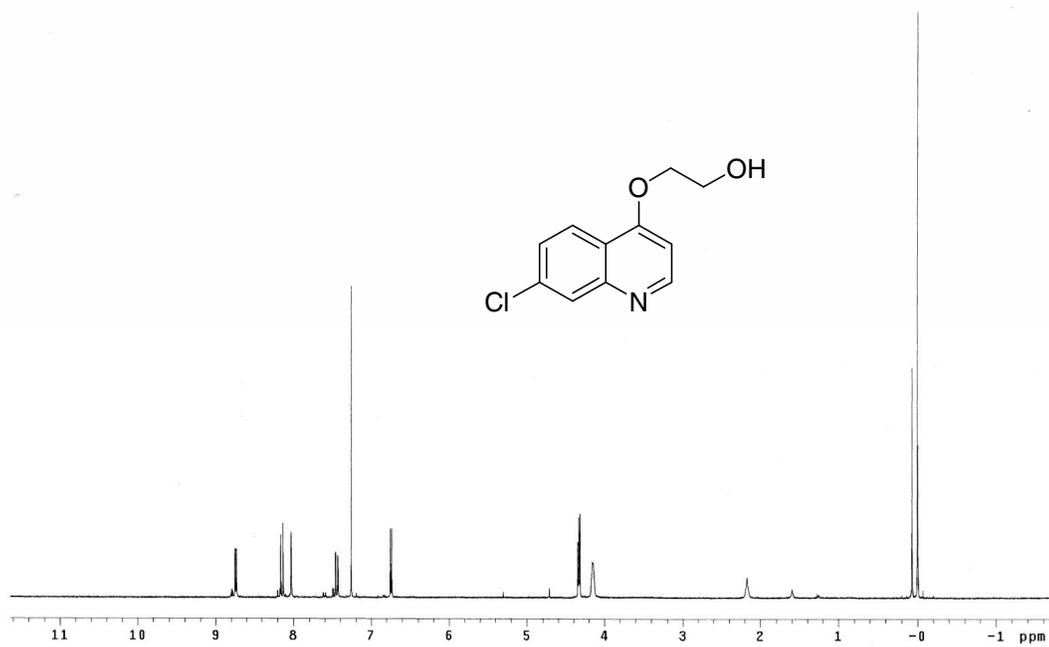


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

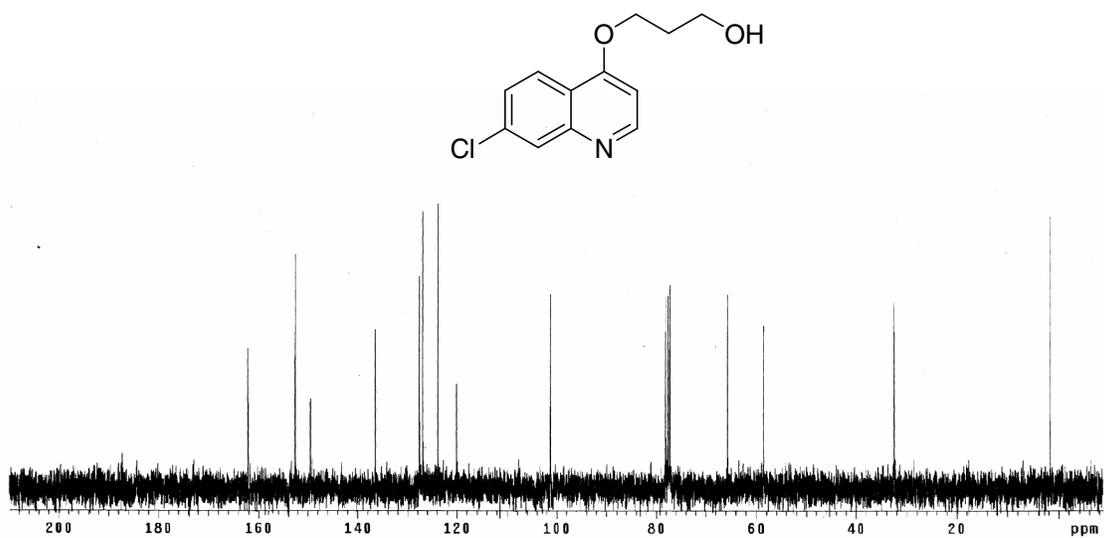
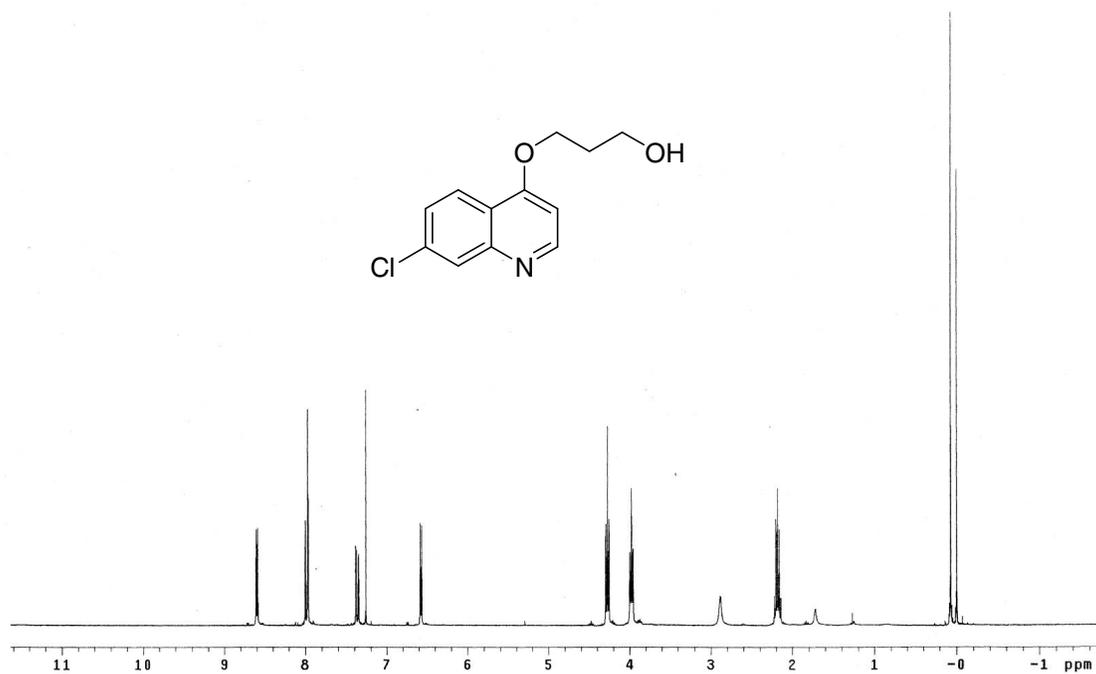


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 75% acetonitrile, 25% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

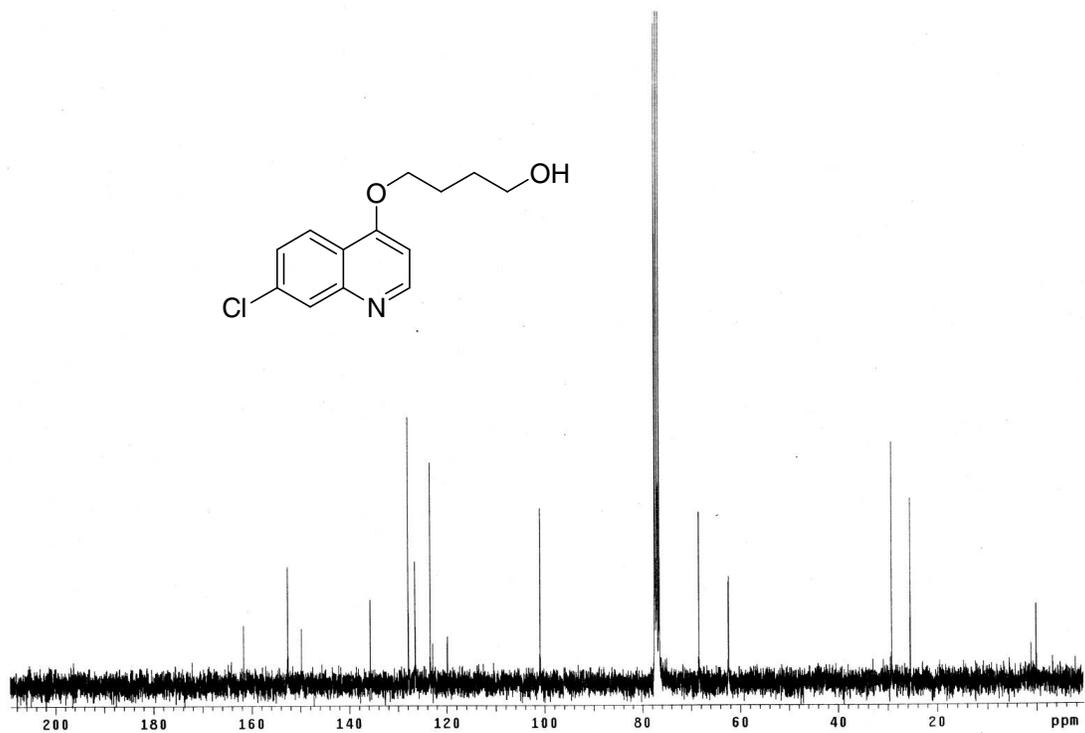
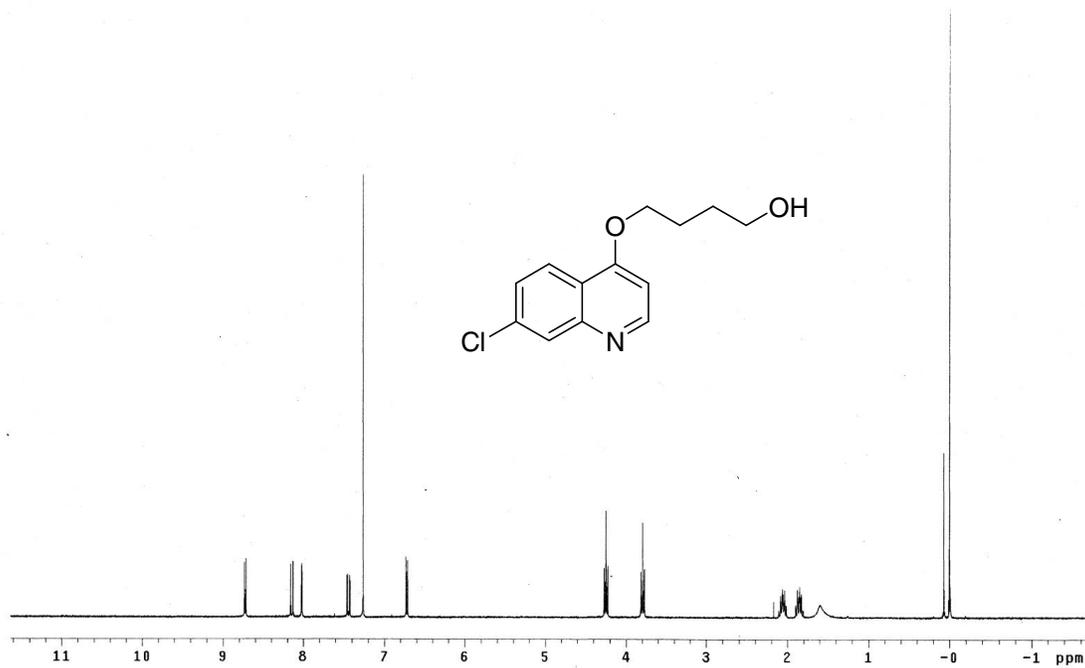
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *O*-(7-chloro-4-quinolyl)ethylene glycol



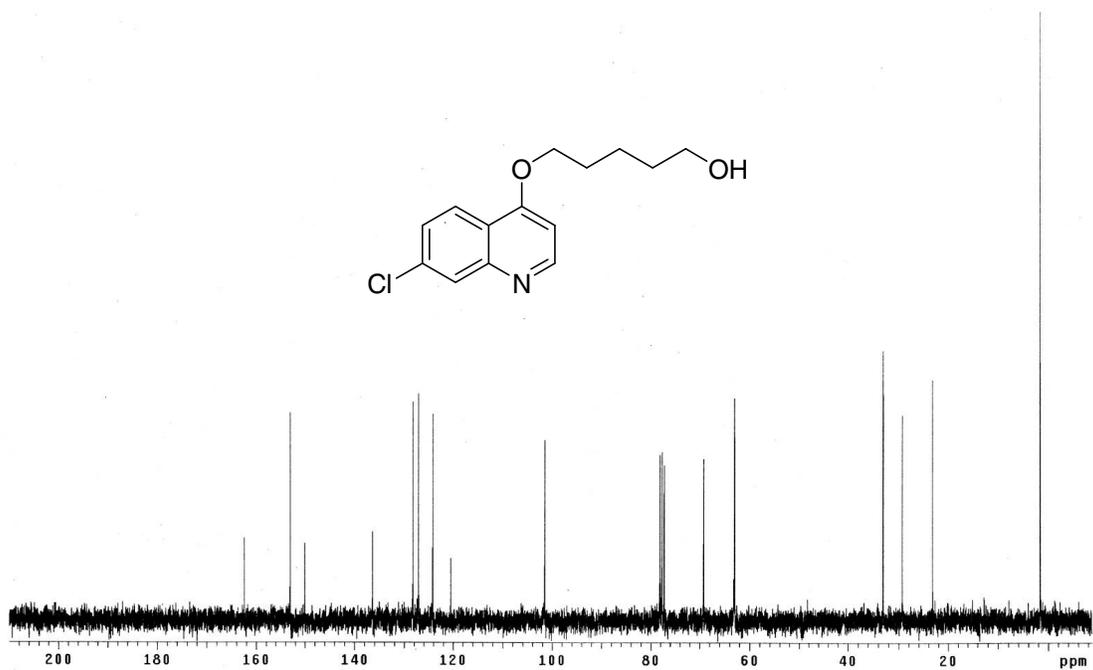
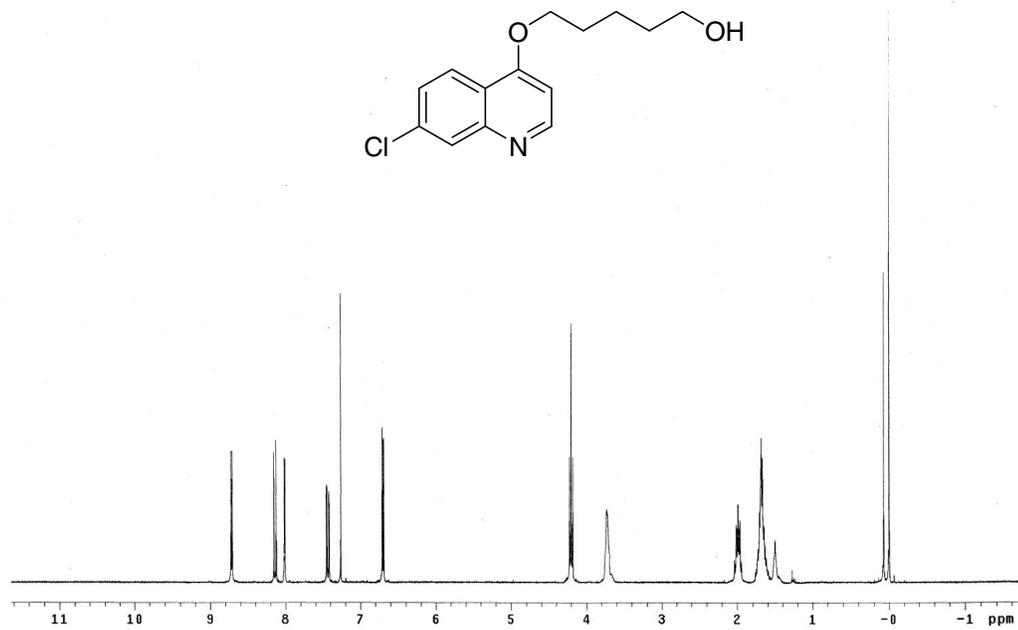
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *O*-(7-chloro-4-quinolyl)-1,3-propanediol



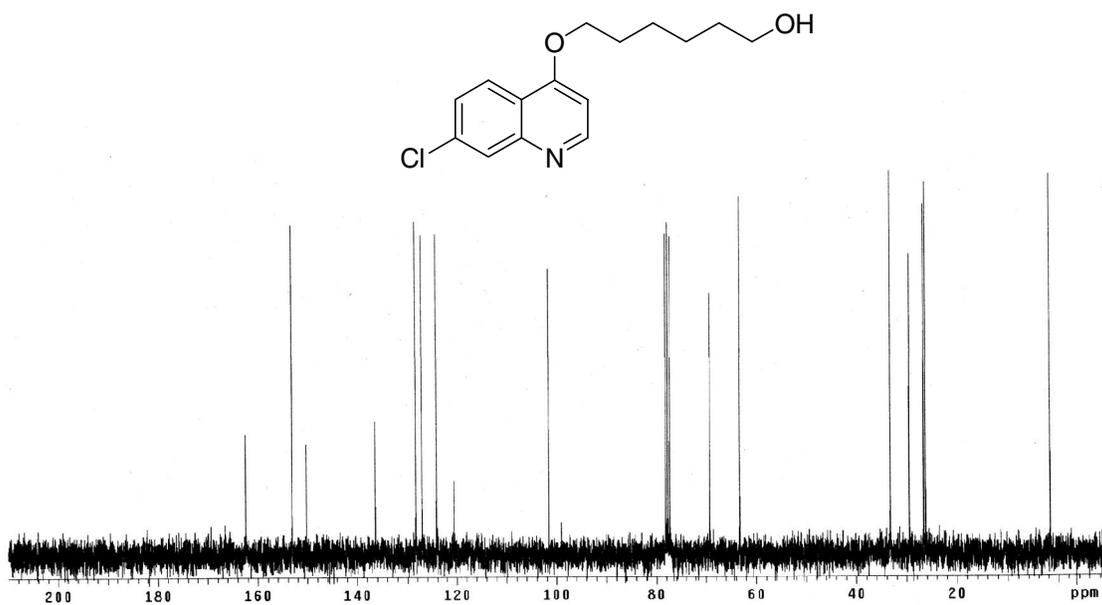
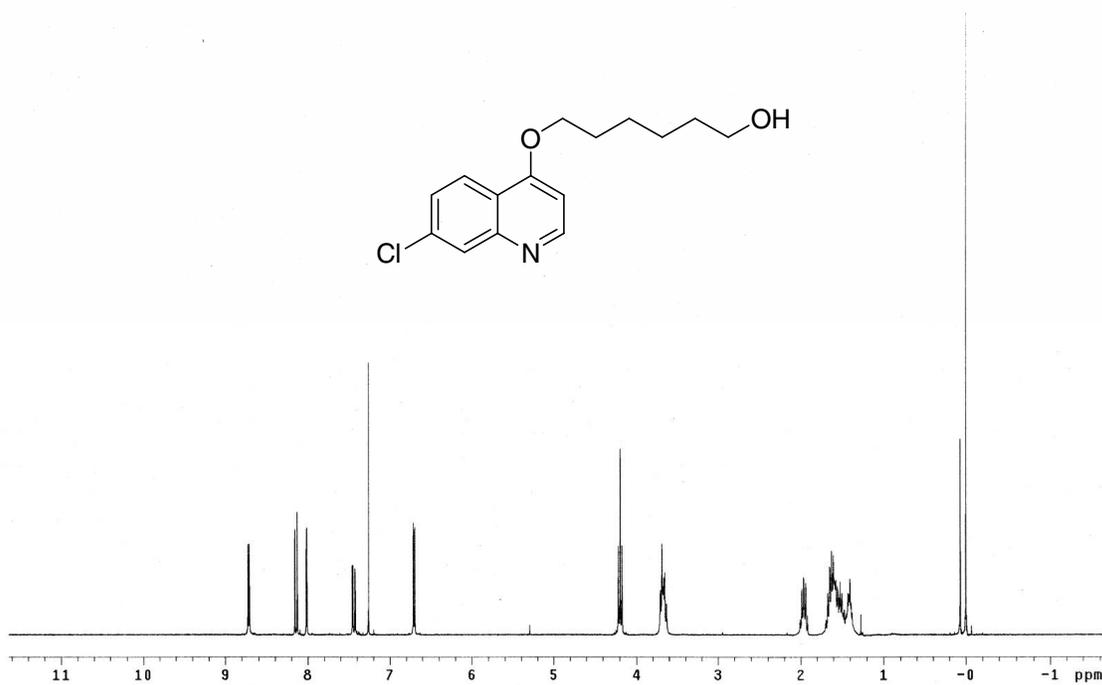
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *O*-(7-chloro-4-quinolyl)-1,4-butanediol



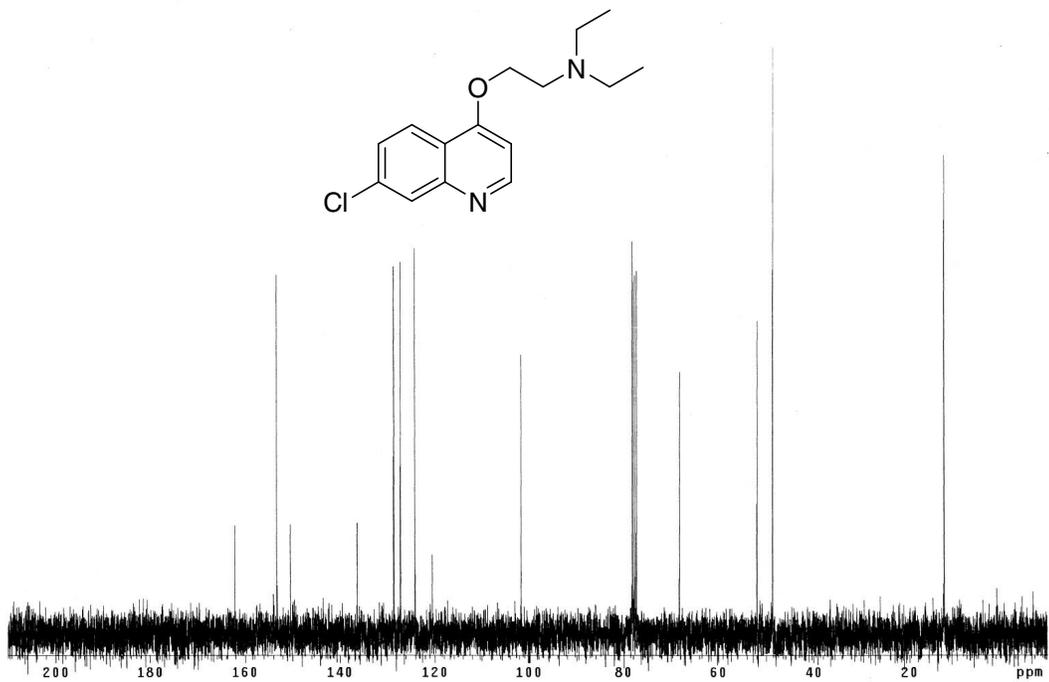
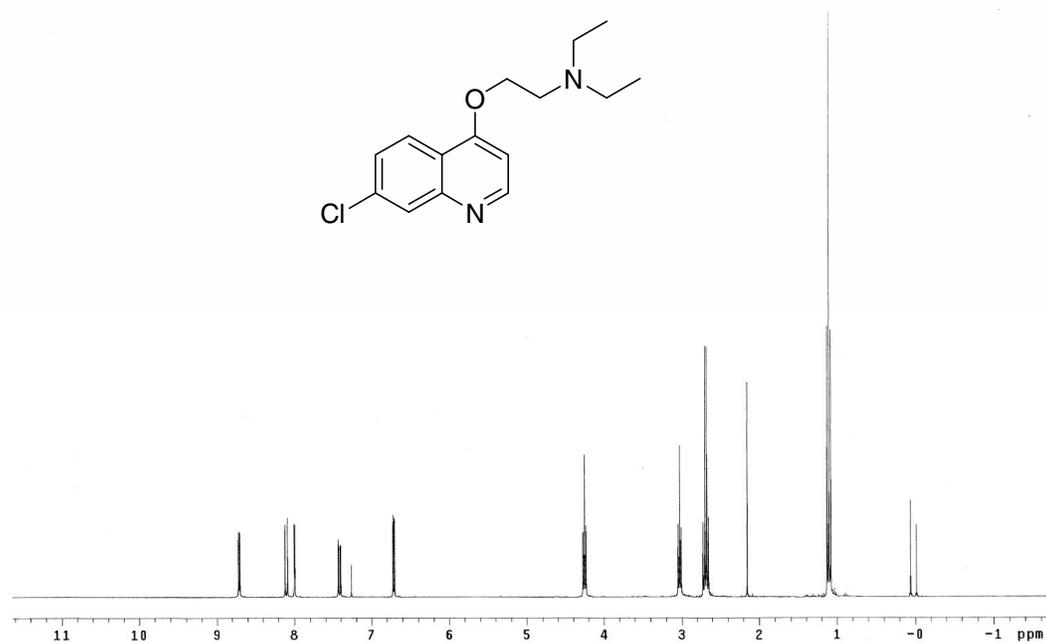
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *O*-(7-chloro-4-quinolyl)-1,5-pentandiol



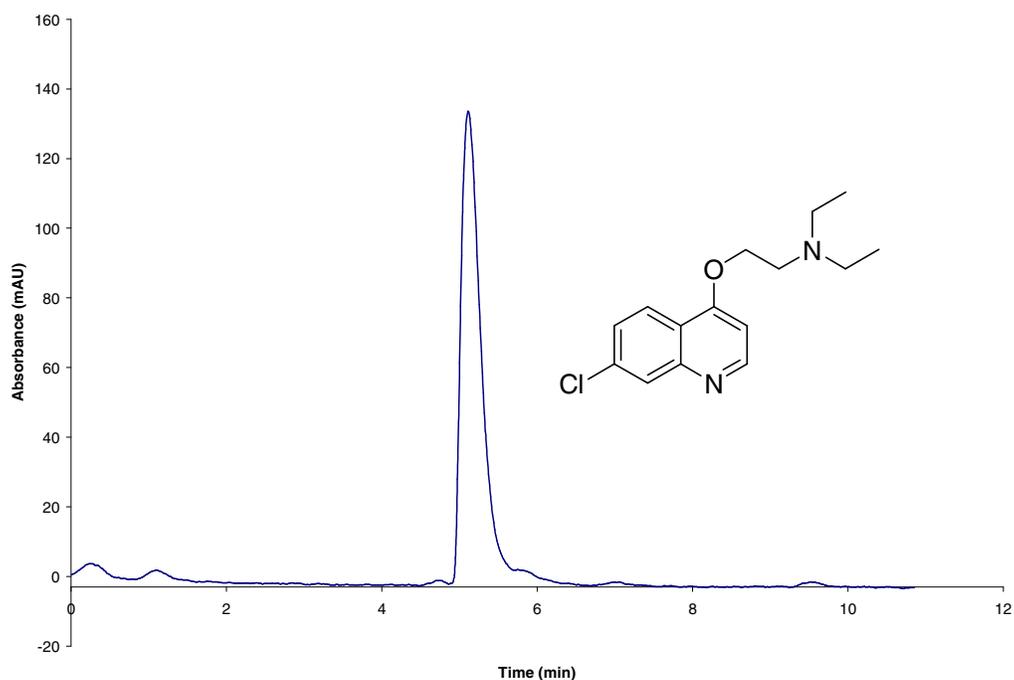
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *O*-(7-chloro-4-quinolyl)-1,6-hexanediol



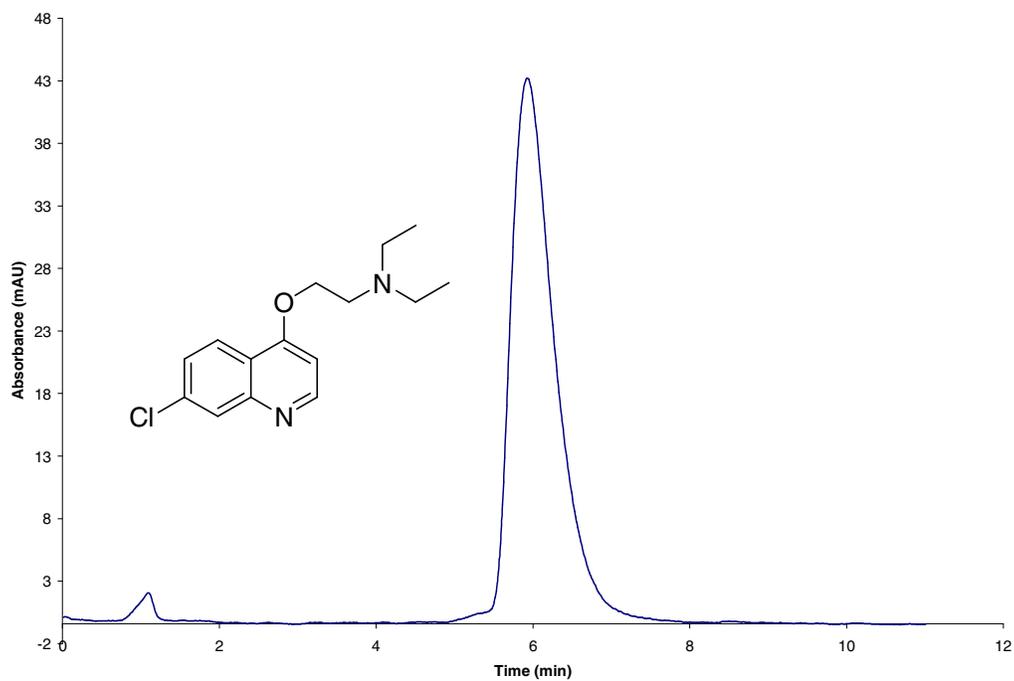
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *O*-(7-chloro-4-quinolyl)-2-(*N,N*-diethylamino)ethanol



### HPLC analysis of *O*-(7-chloro-4-quinolyyl)-2-(*N,N*-diethylamino)ethanol

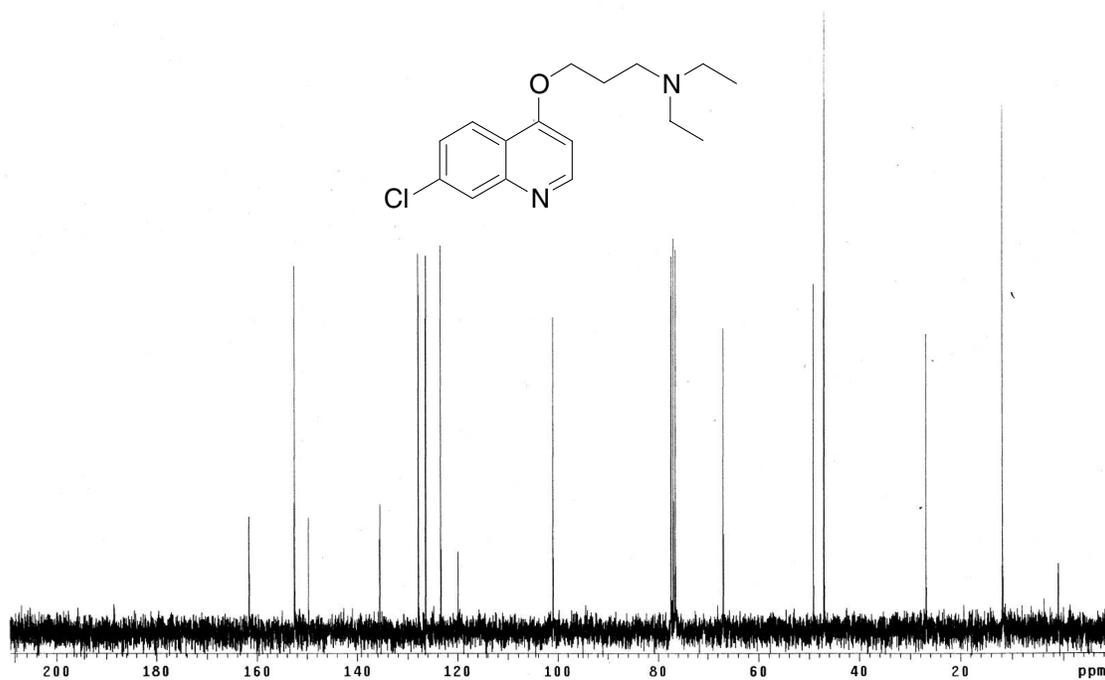
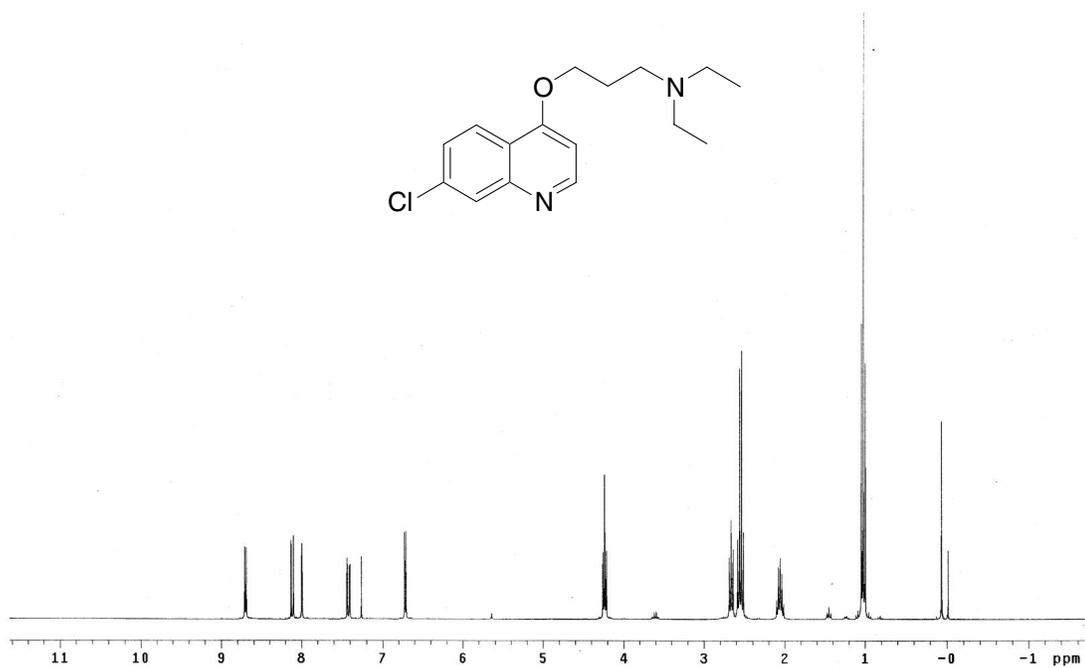


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 4  $\mu$ l, concentration: 3 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

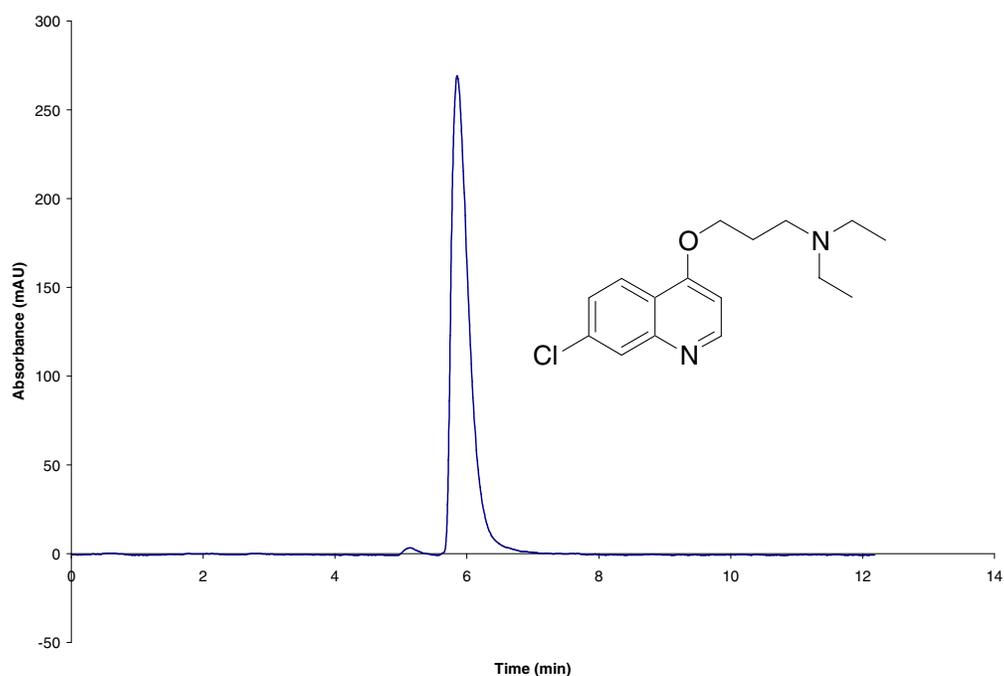


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 90% ethanol, 9% acetonitrile and 1% triethylamine, injection volume: 10  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

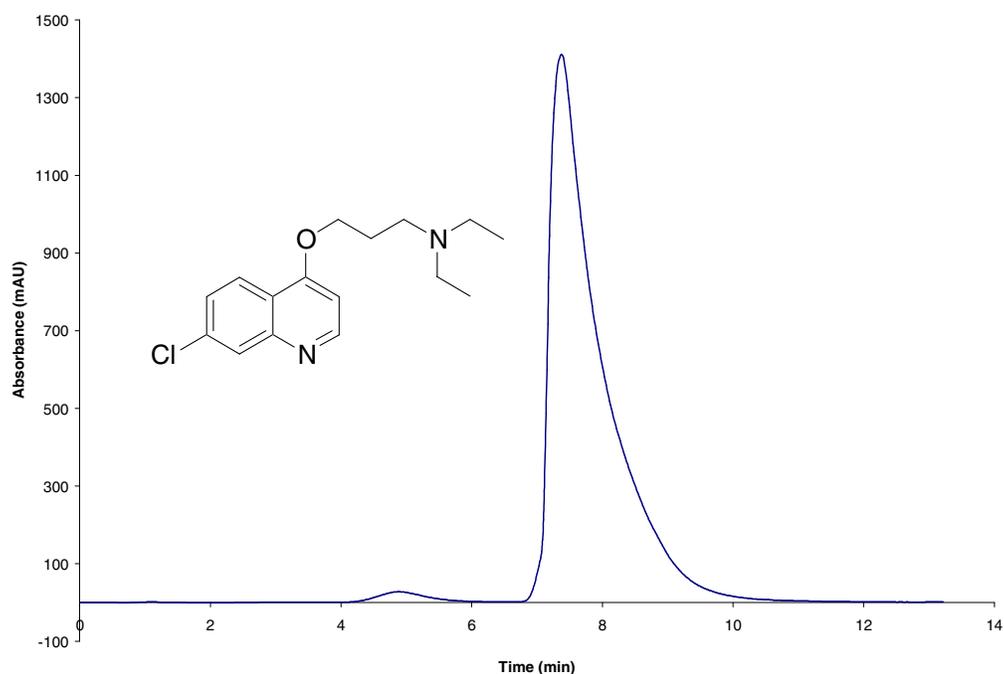
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *O*-(7-chloro-4-quinolyl)-3-(*N,N*-diethylamino)propanol



## HPLC analysis of *O*-(7-chloro-4-quinolyyl)-3-(*N,N*-diethylamino)propanol

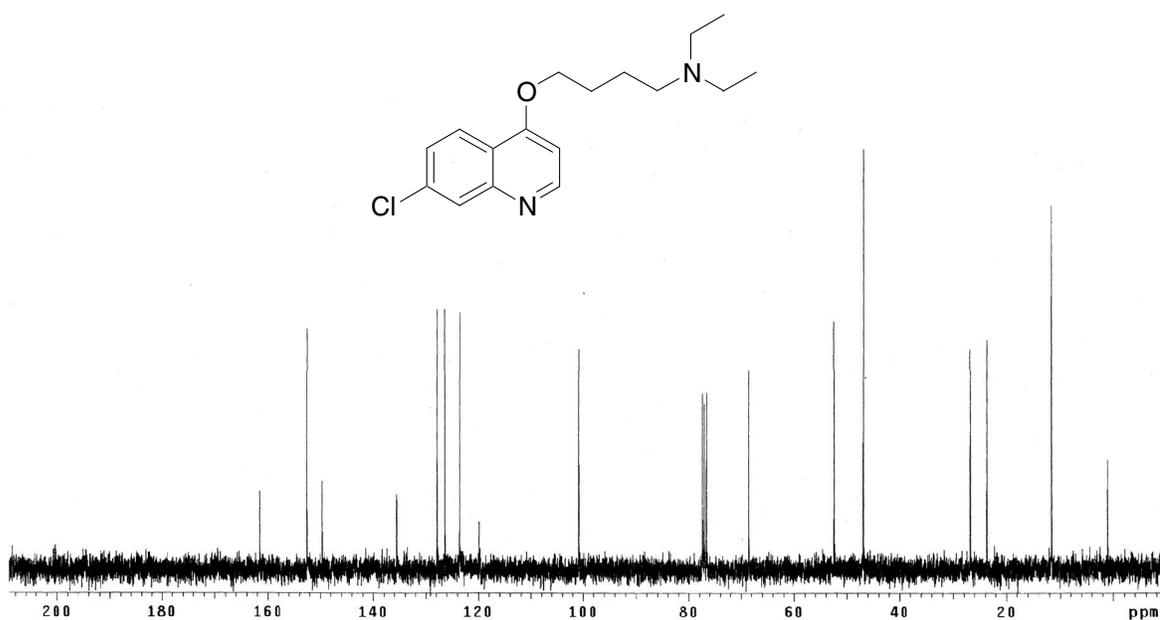
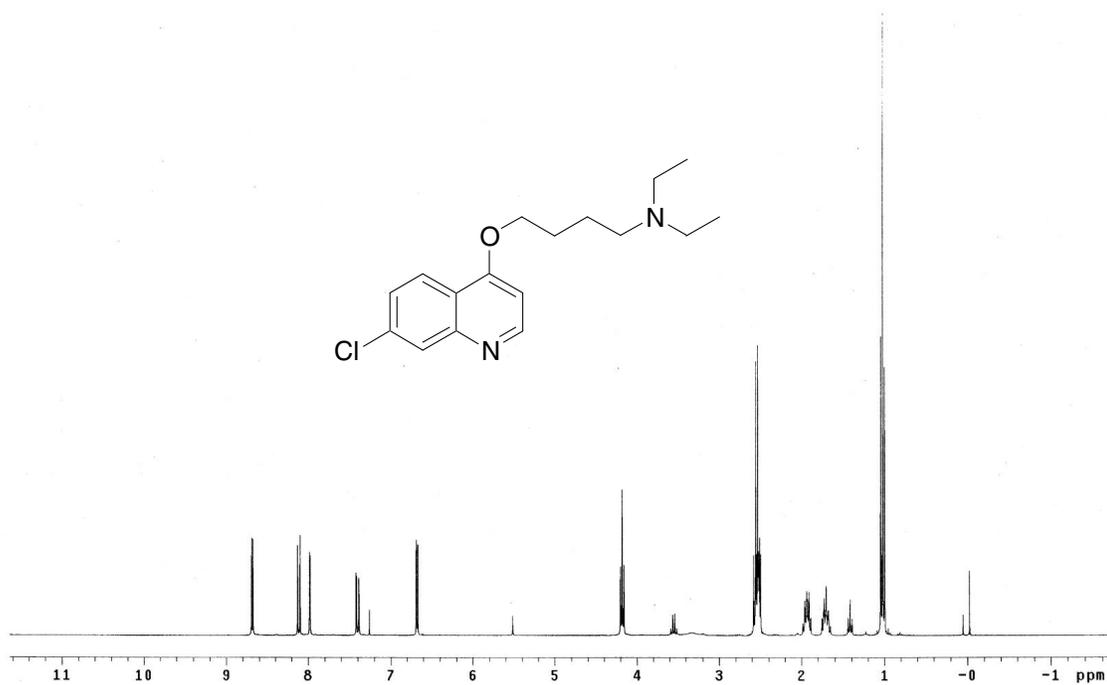


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 4  $\mu$ l, concentration: 2 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

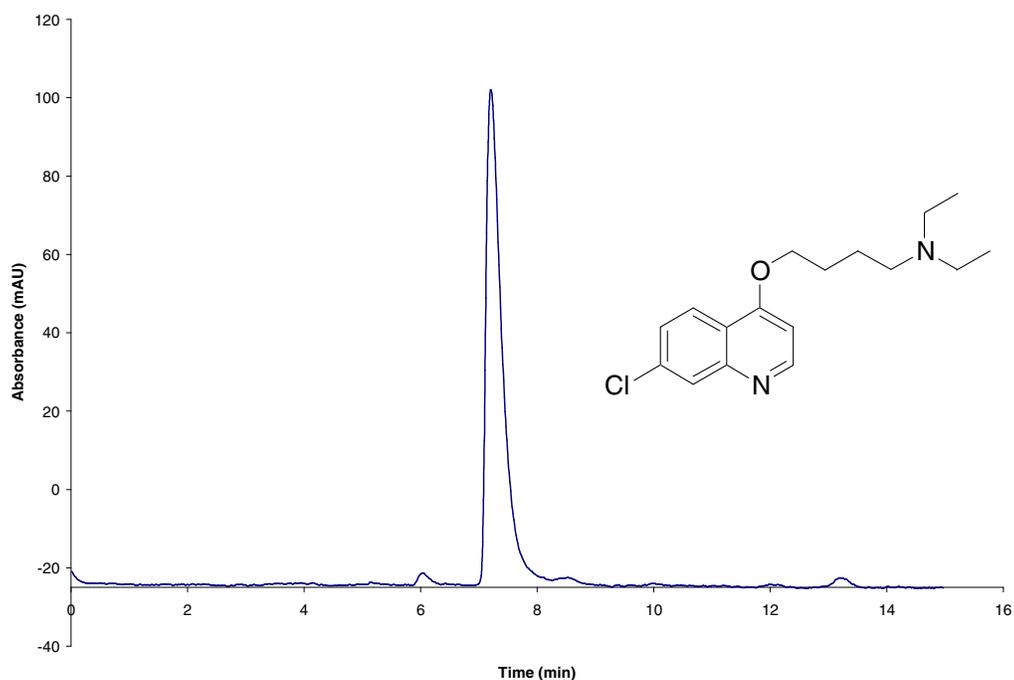


Conditions: Nucleosil NH<sub>2</sub> column (Alltech applied science), mobile phase: 90% ethanol, 9% acetonitrile and 1% triethylamine, injection volume: 50  $\mu$ l, concentration: 2 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

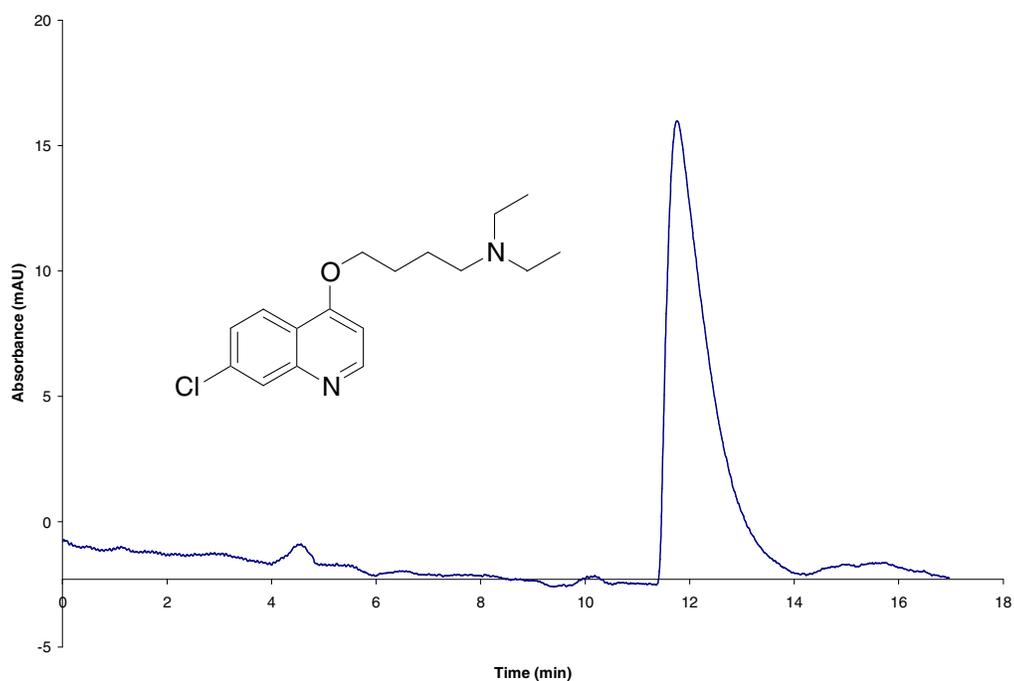
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *O*-(7-chloro-4-quinolyl)-4-(*N,N*-diethylamino)butanol



## HPLC analysis of *O*-(7-chloro-4-quinolyyl)-4-(*N,N*-diethylamino)butanol

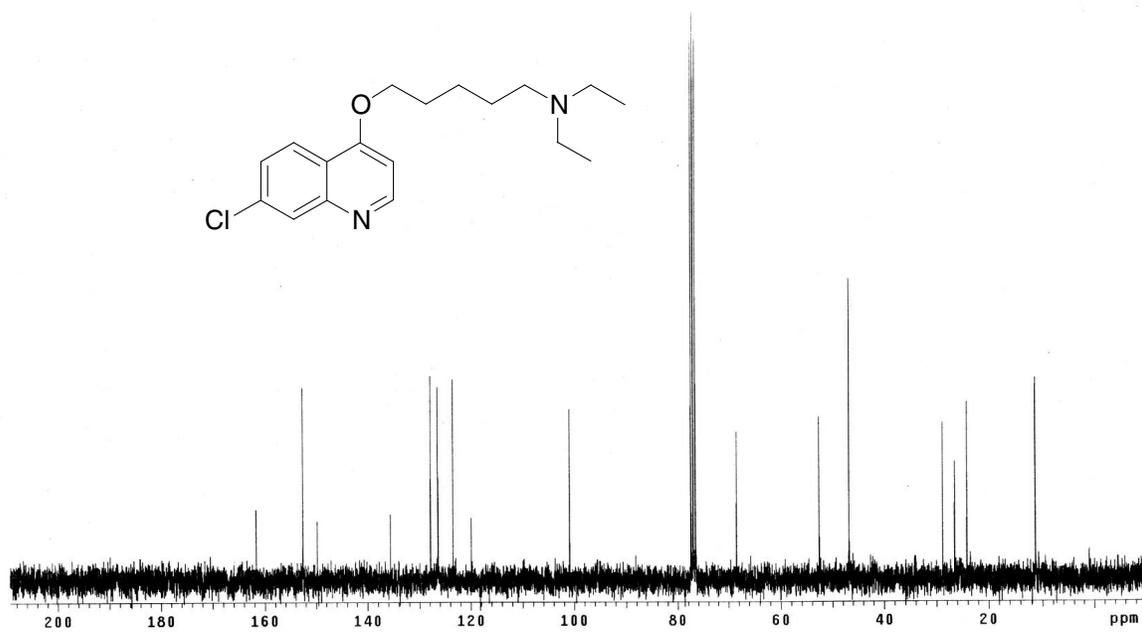
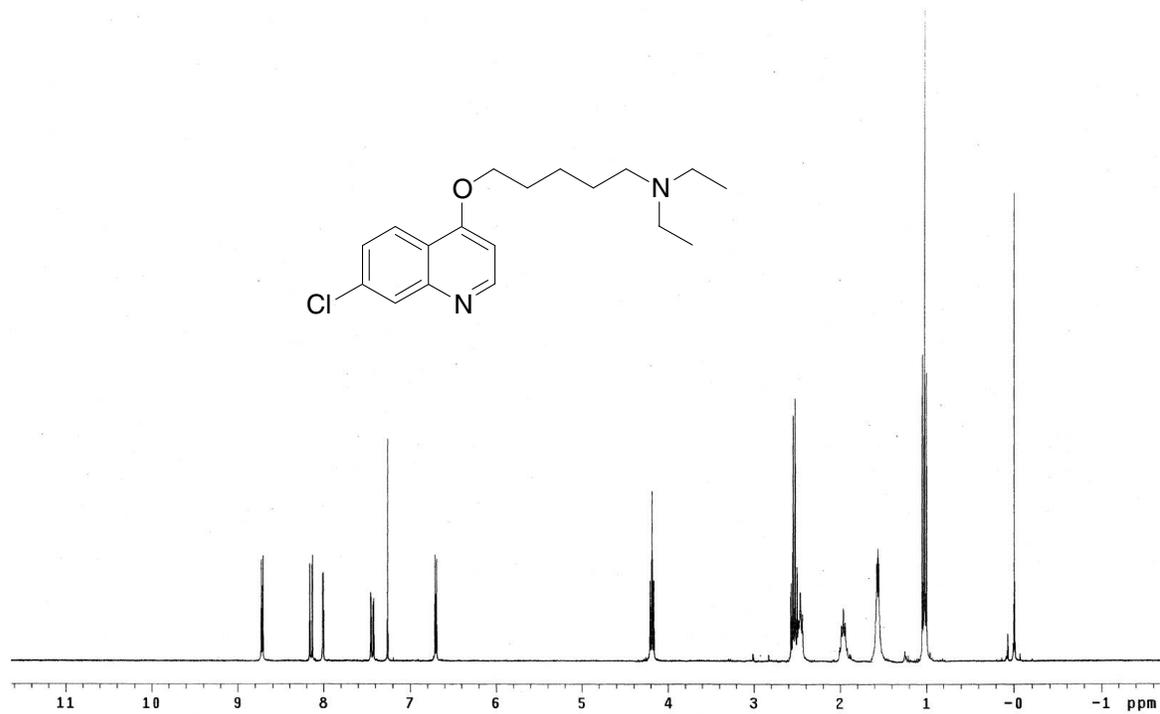


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 3  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

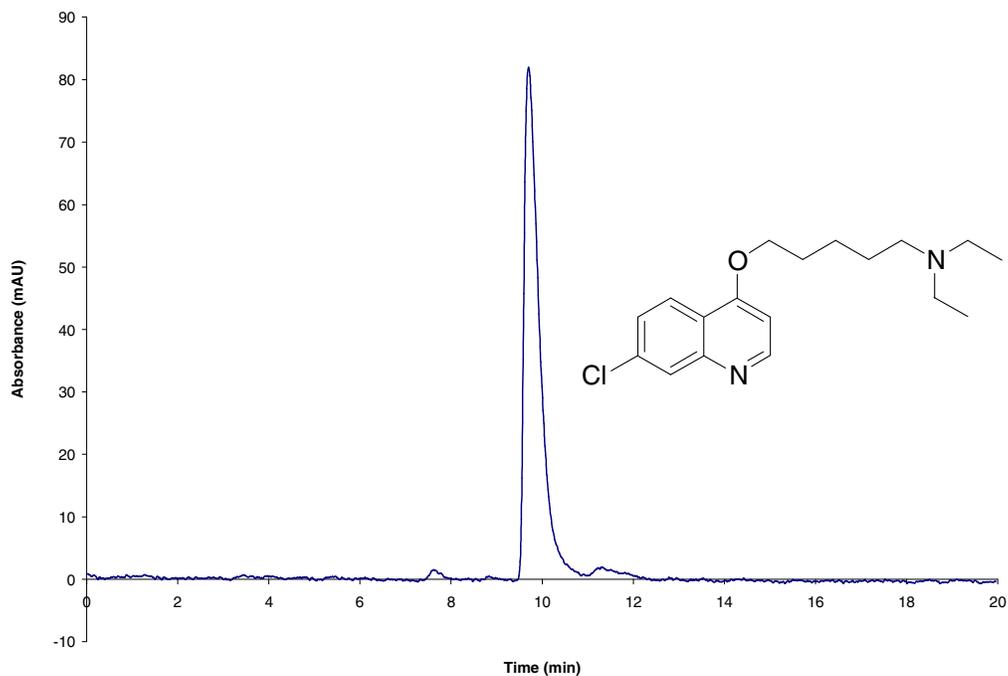


Conditions: Nucleosil NH<sub>2</sub> column (Alltech applied science), mobile phase: 90% ethanol, 9% acetonitrile and 1% triethylamine, injection volume: 200  $\mu$ l, concentration: 0.2 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

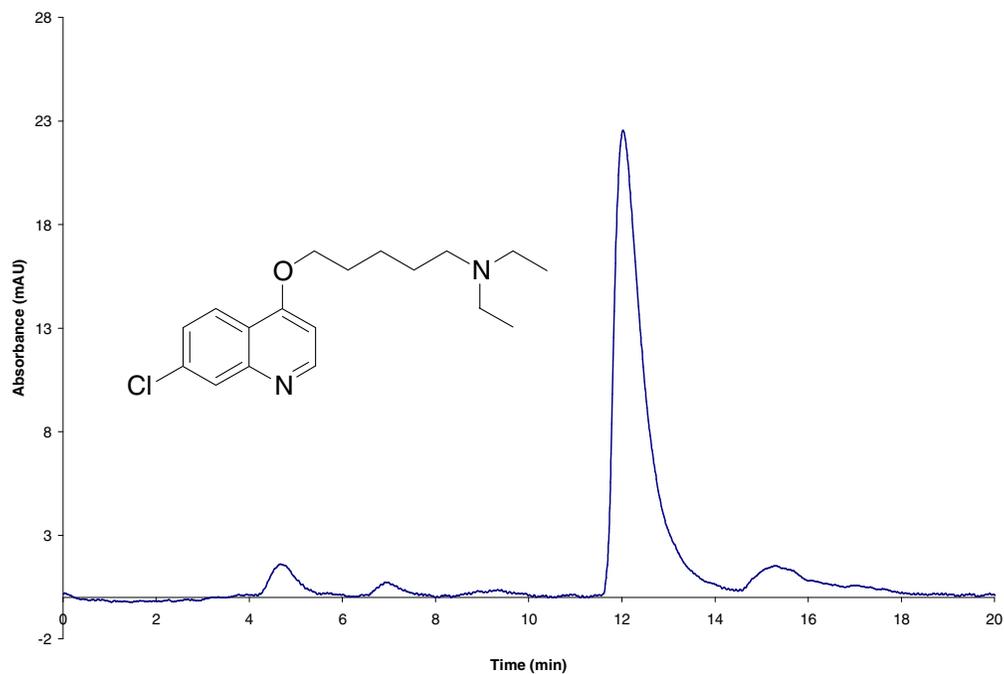
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *O*-(7-chloro-4-quinolyl)-5-(*N,N*-diethylamino)pentanol



### HPLC analysis of *O*-(7-chloro-4-quinolyyl)-5-(*N,N*-diethylamino)pentanol

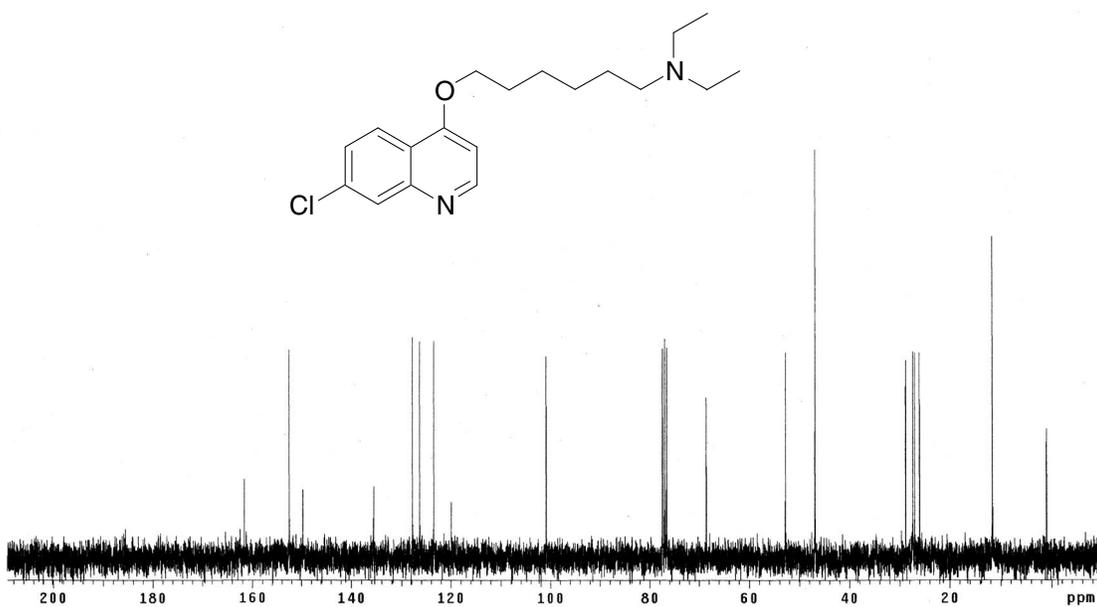
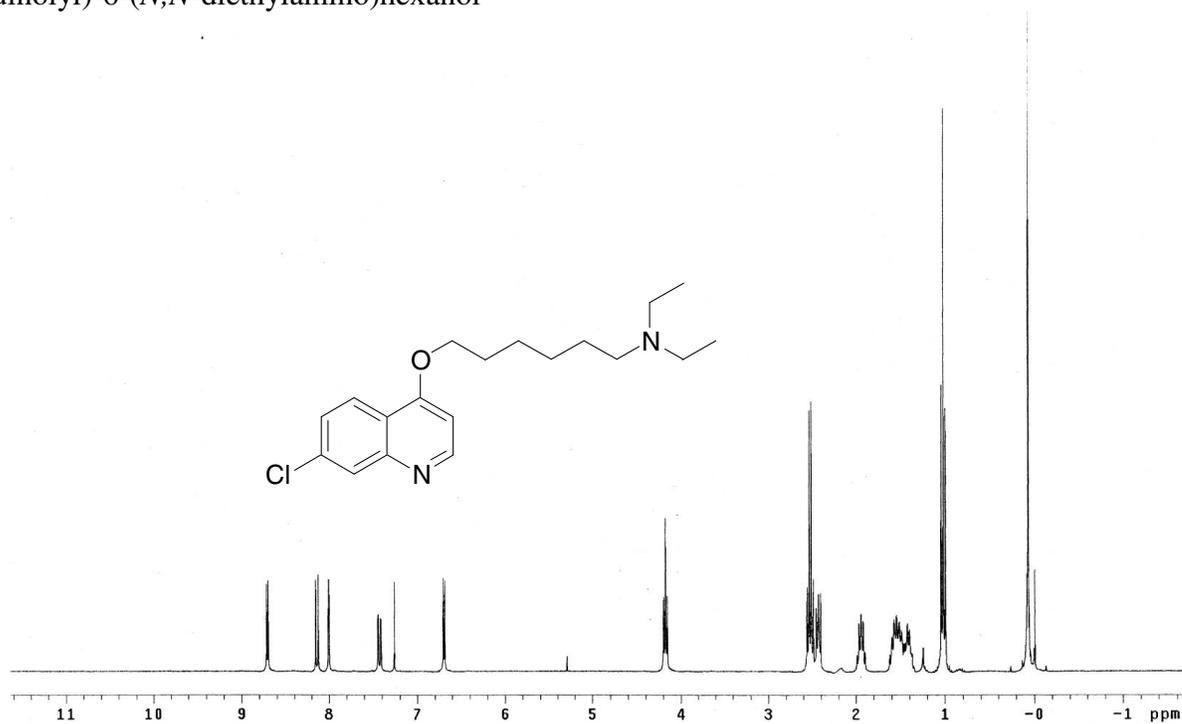


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 0.5 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

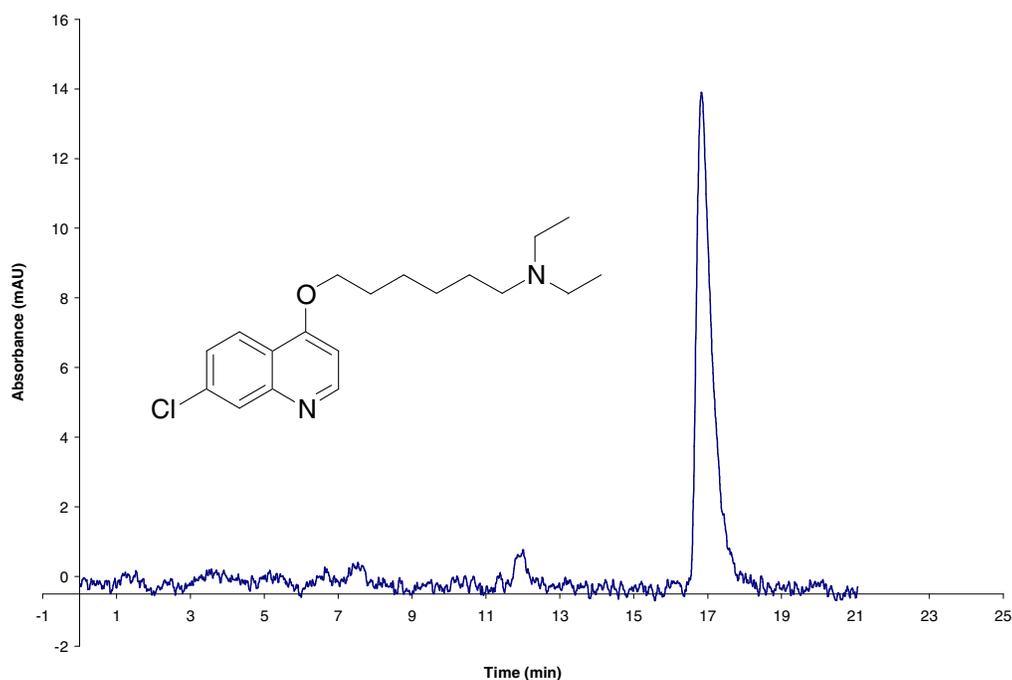


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 90% ethanol, 9% acetonitrile and 1% triethylamine, injection volume: 13  $\mu$ l, concentration: 0.5 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

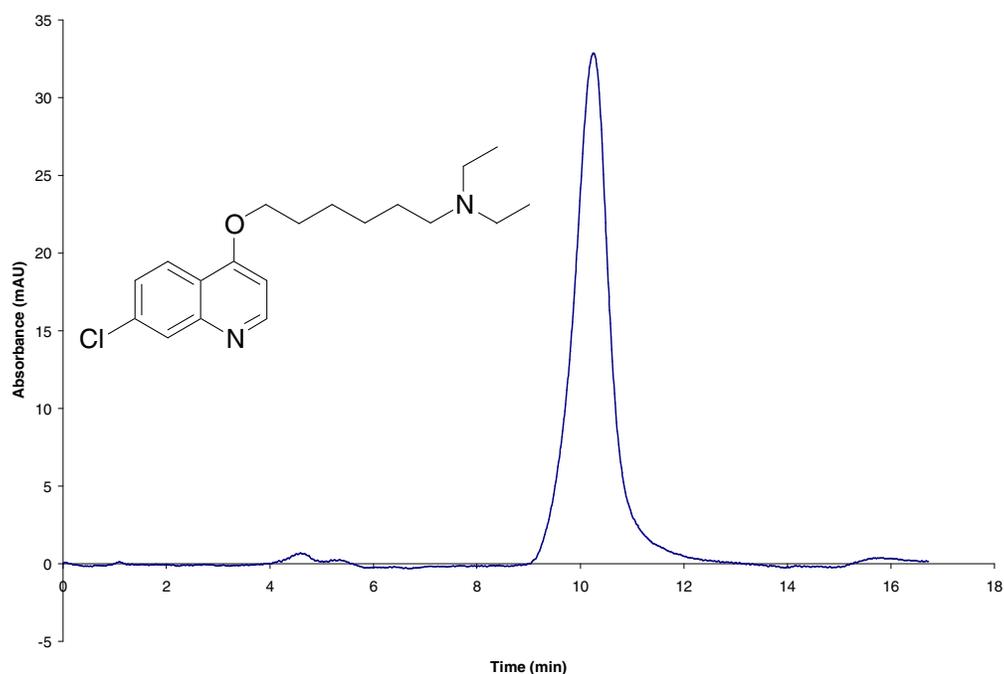
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *O*-(7-chloro-4-quinolyl)-6-(*N,N*-diethylamino)hexanol



## HPLC analysis of *O*-(7-chloro-4-quinolyyl)-6-(*N,N*-diethylamino)hexanol

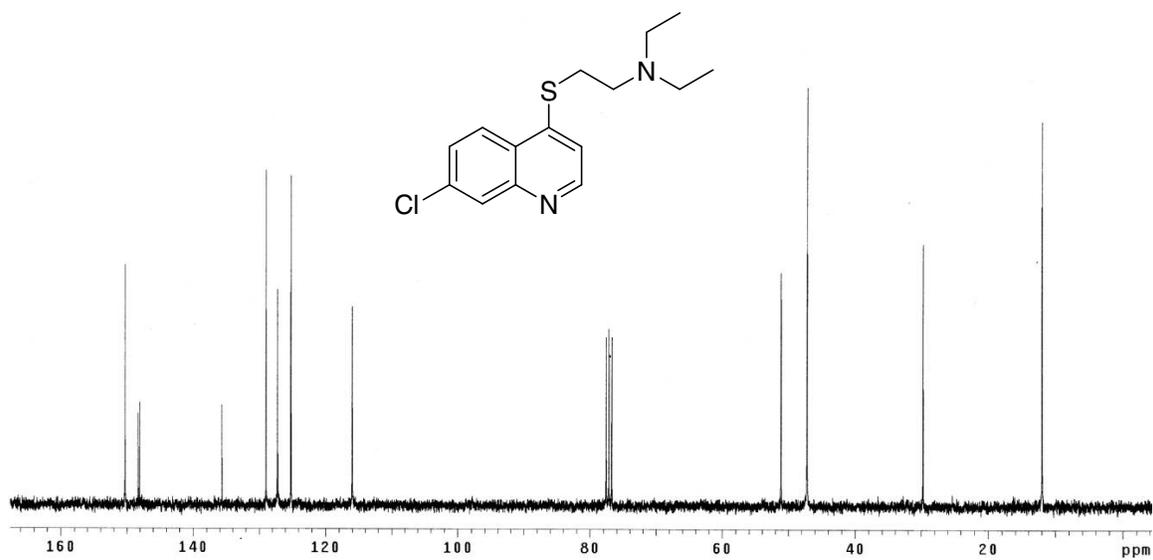
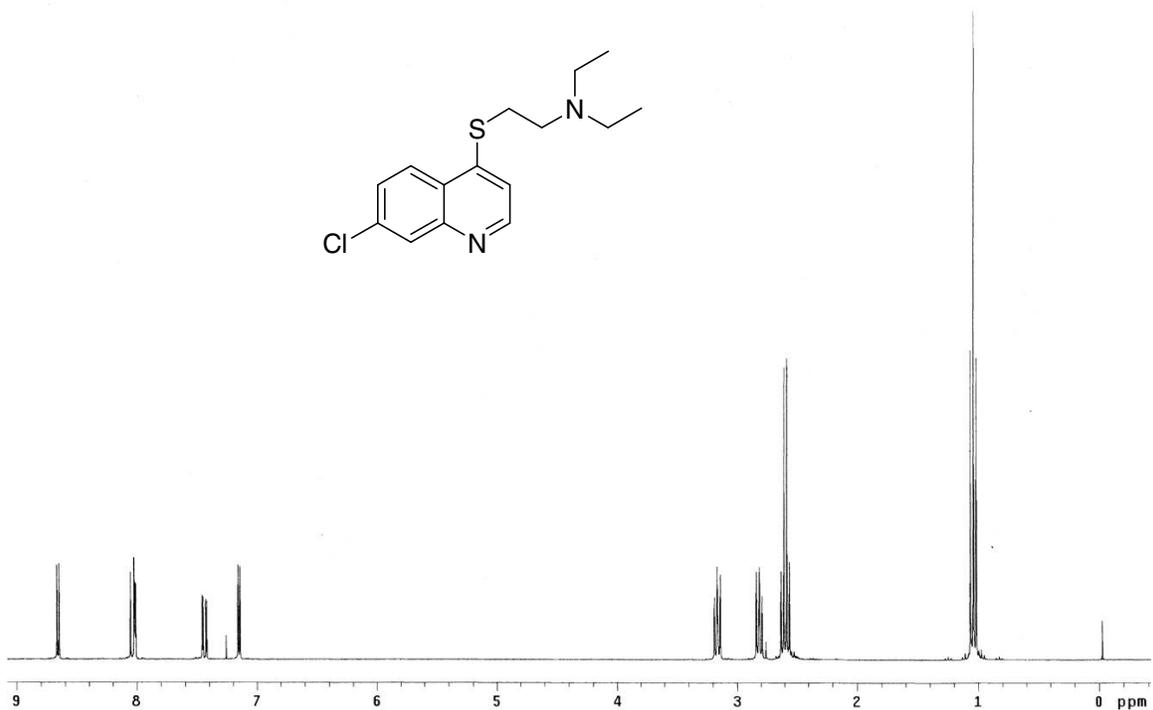
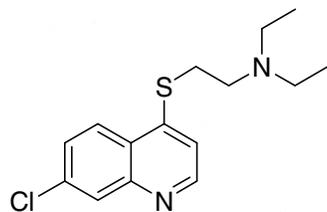


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 20  $\mu$ l, concentration: 0.5 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

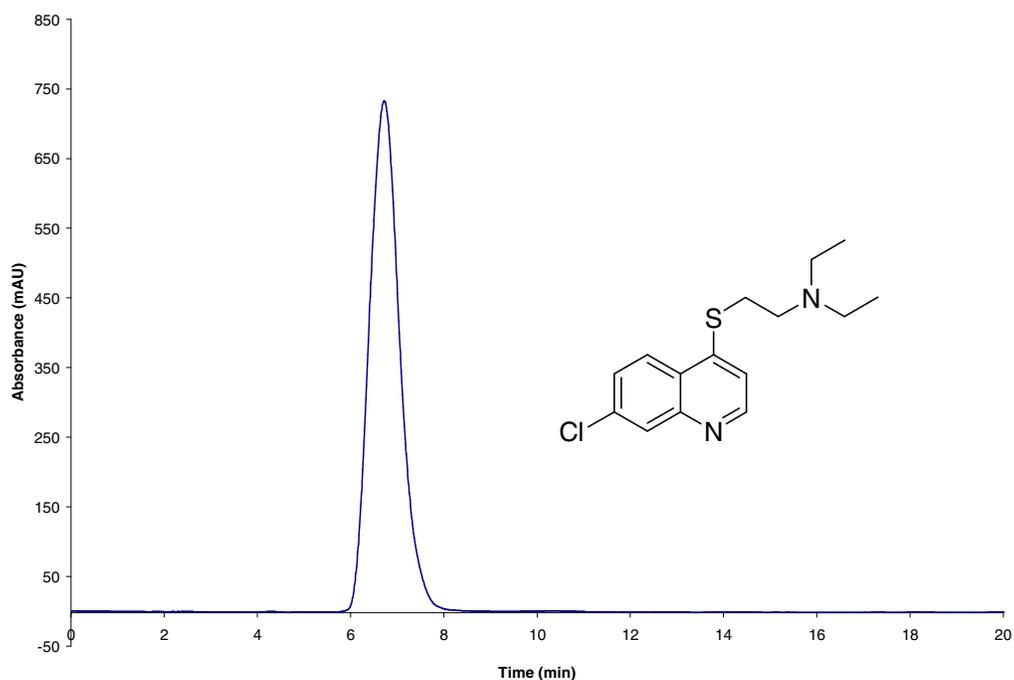


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 90% ethanol, 9% acetonitrile and 1% triethylamine, injection volume: 20  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

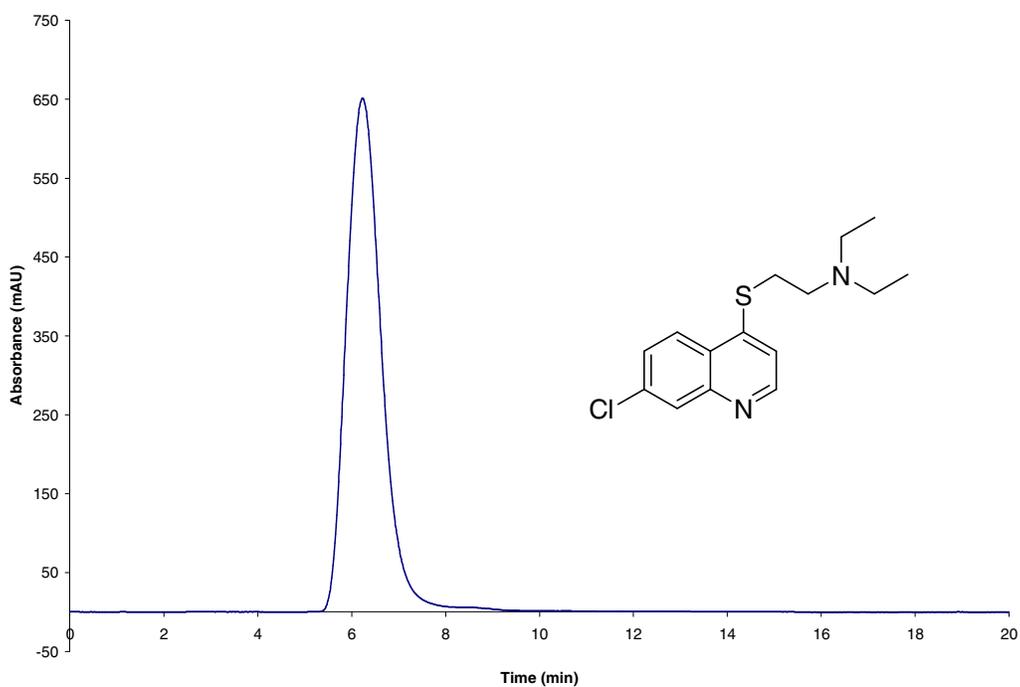
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *S*-(7-chloro-4-quinolyl)-2-(*N,N*-diethylamino)ethanethiol



### HPLC analysis of *S*-(7-chloro-4-quinolyyl)-2-(*N,N*-diethylamino)ethanethiol

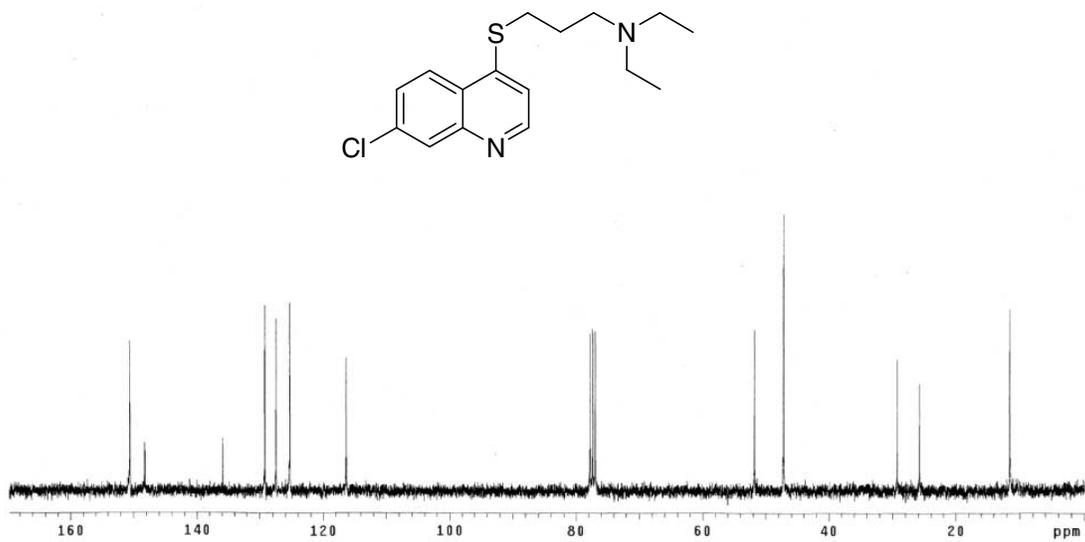
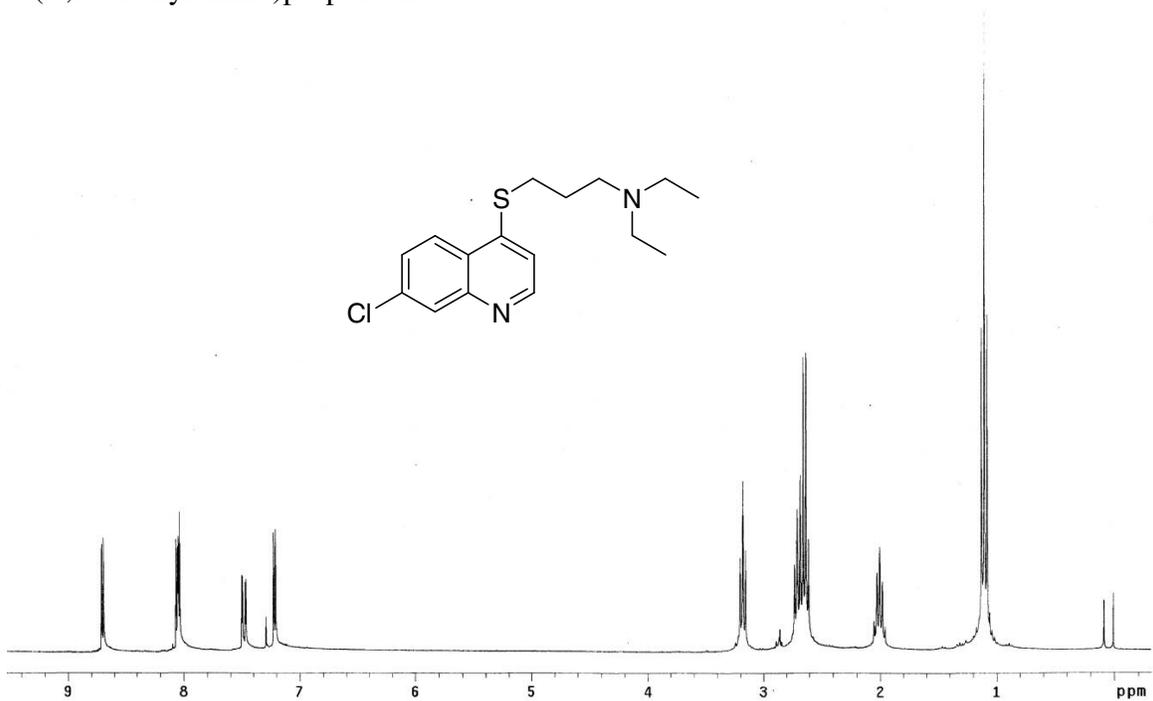


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 8  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

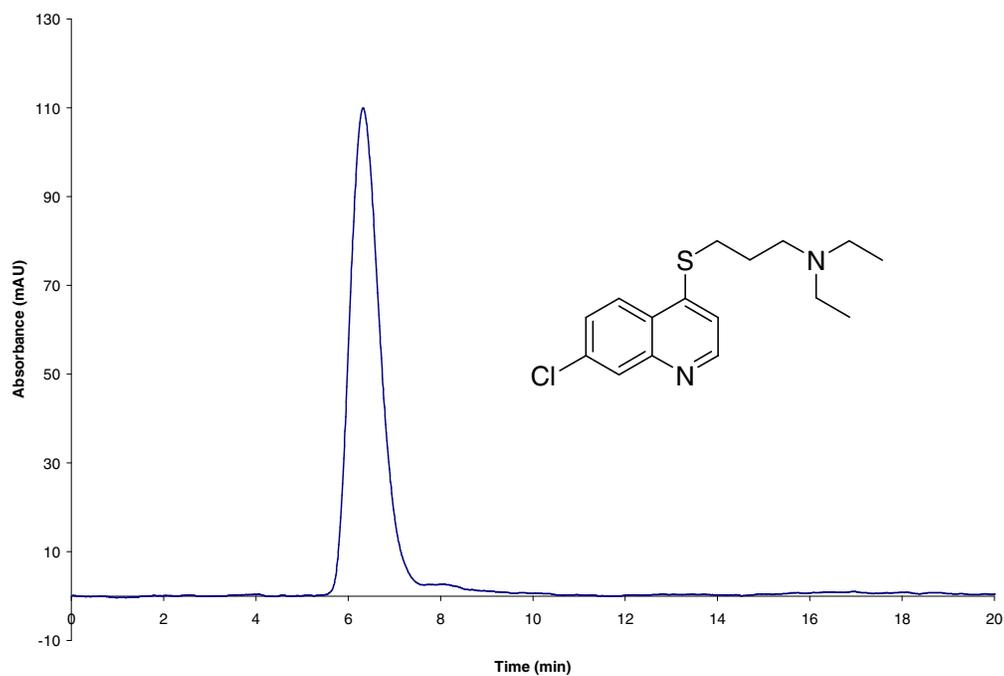


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 8  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

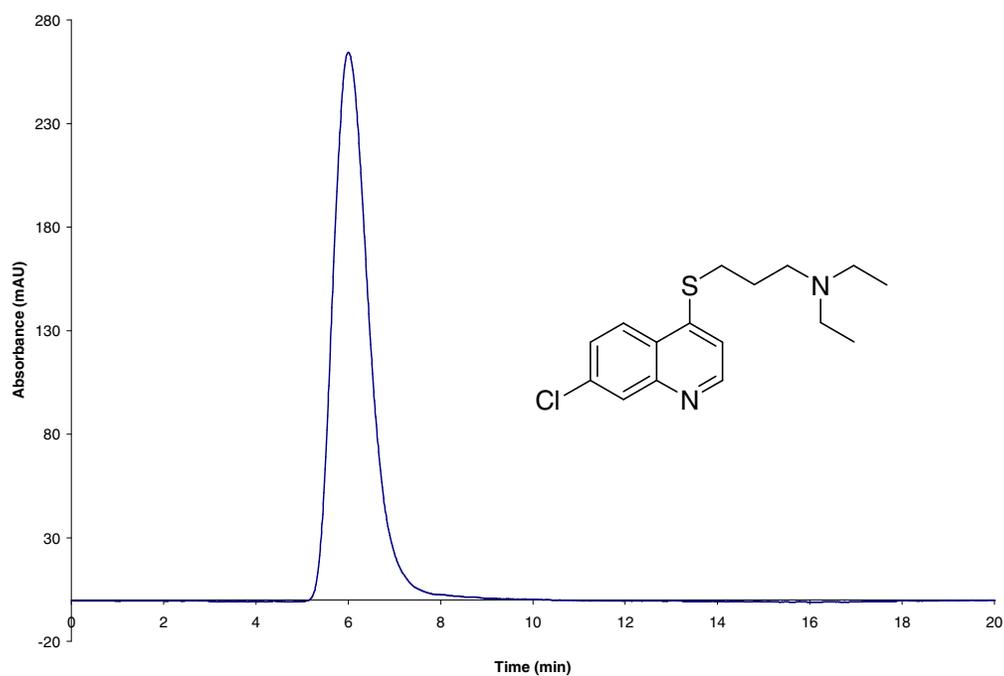
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *S*-(7-chloro-4-quinolyl)-3-(*N,N*-diethylamino)propanethiol



## HPLC analysis of *S*-(7-chloro-4-quinolyyl)-3-(*N,N*-diethylamino)propanethiol

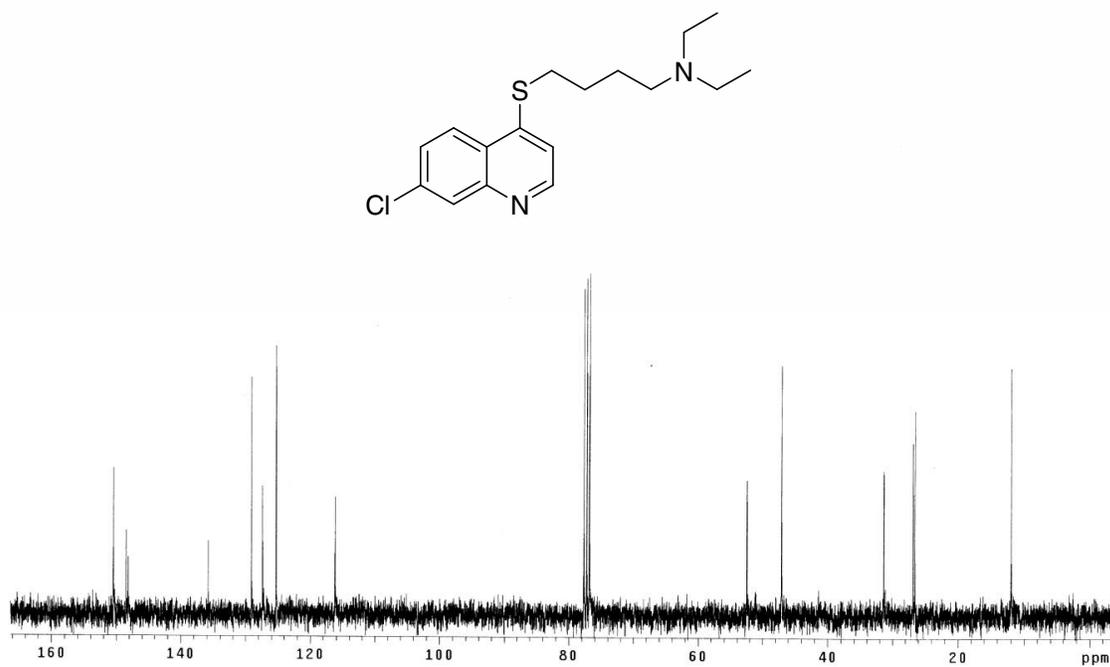
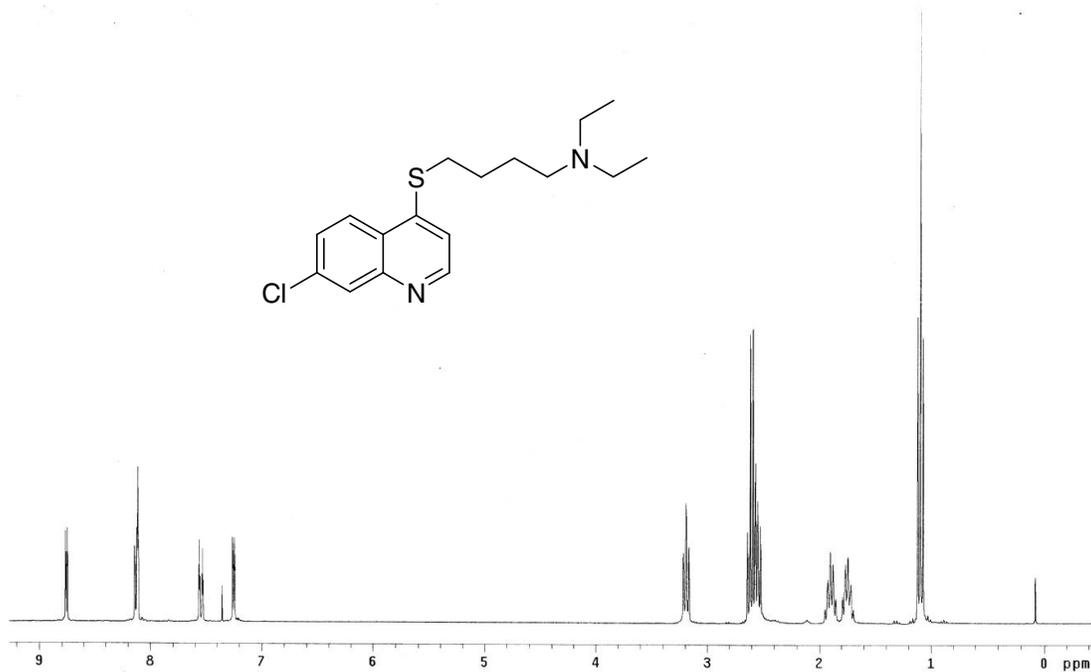


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 24  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

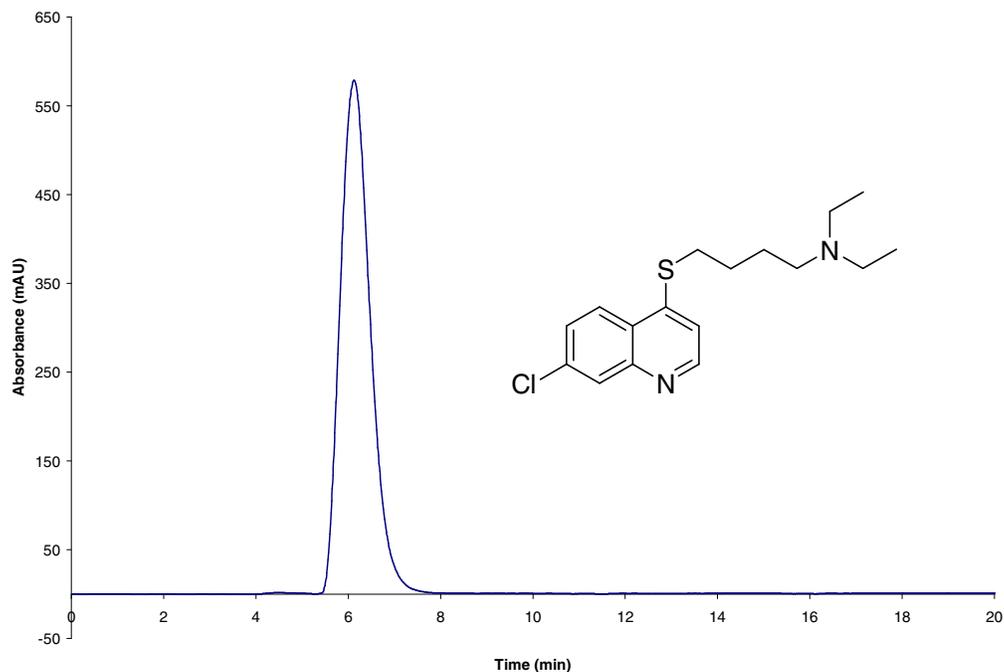


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

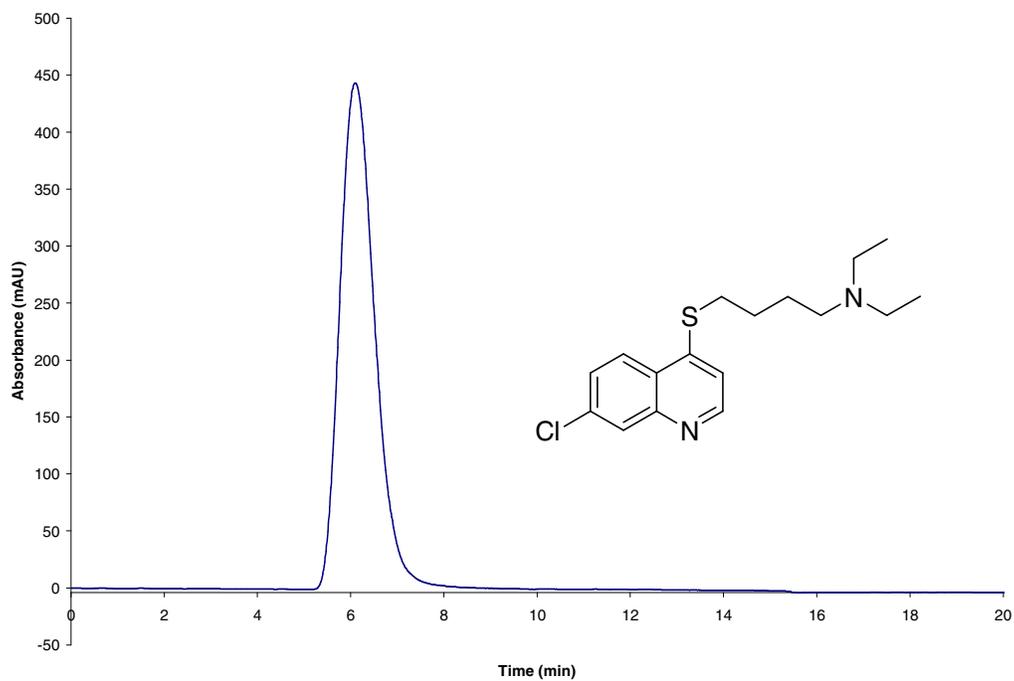
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *S*-(7-chloro-4-quinolyl)-4-(*N,N*-diethylamino)butanethiol



### HPLC analysis of *S*-(7-chloro-4-quinolyyl)-4-(*N,N*-diethylamino)butanethiol

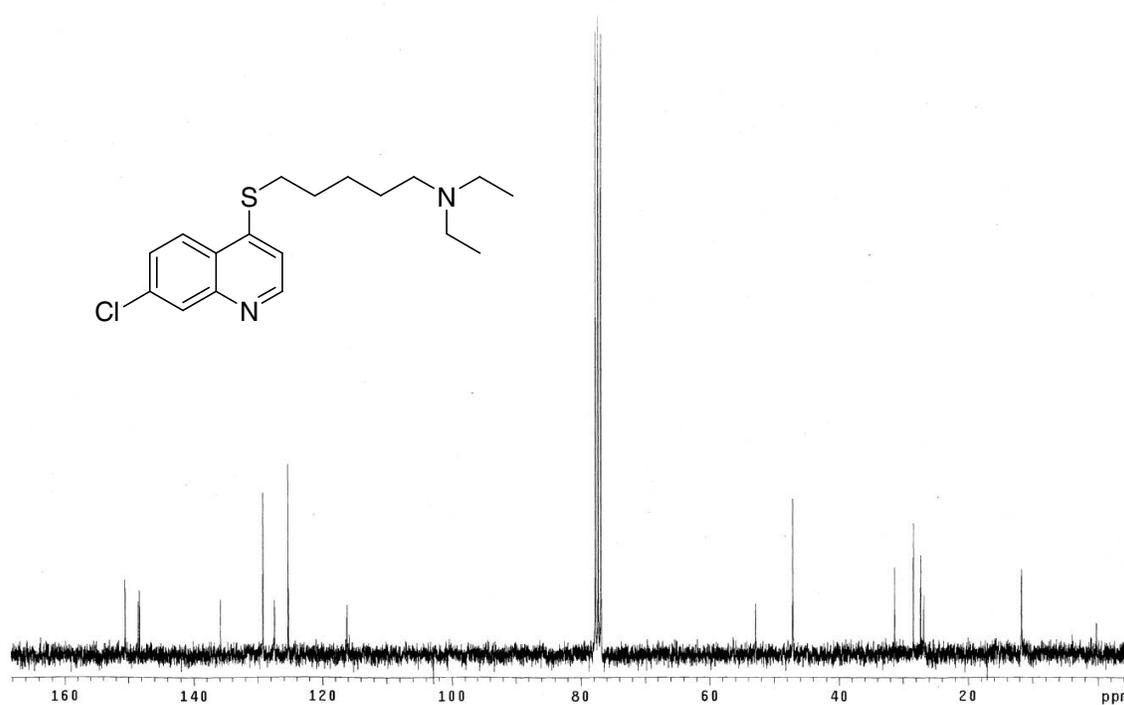
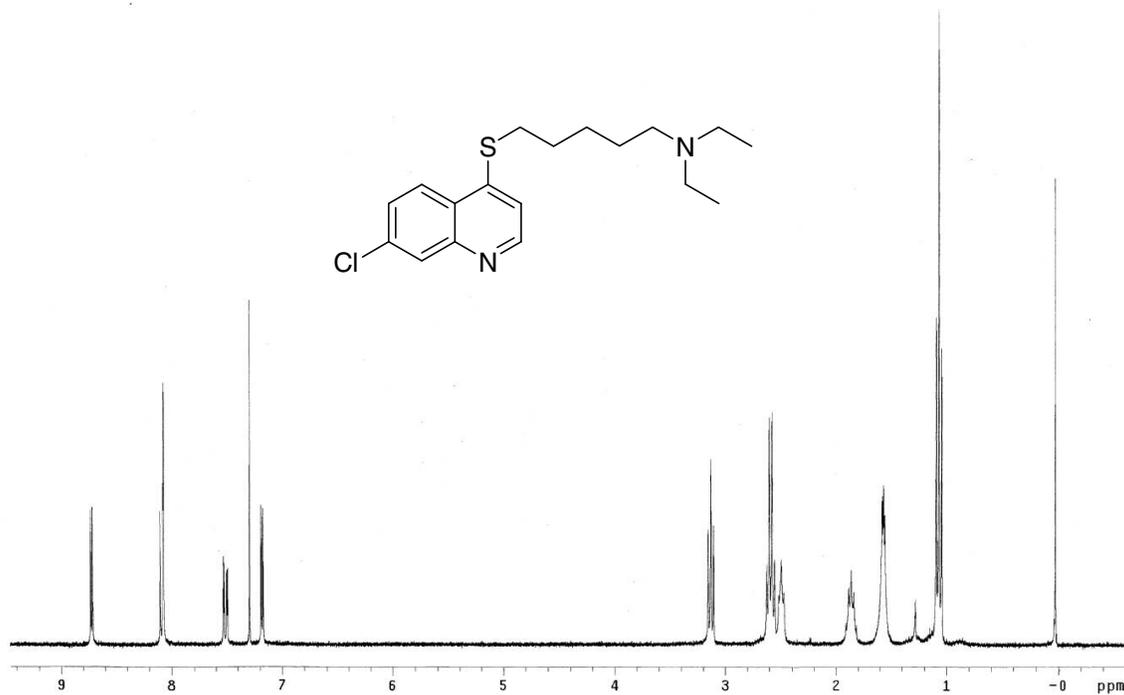


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

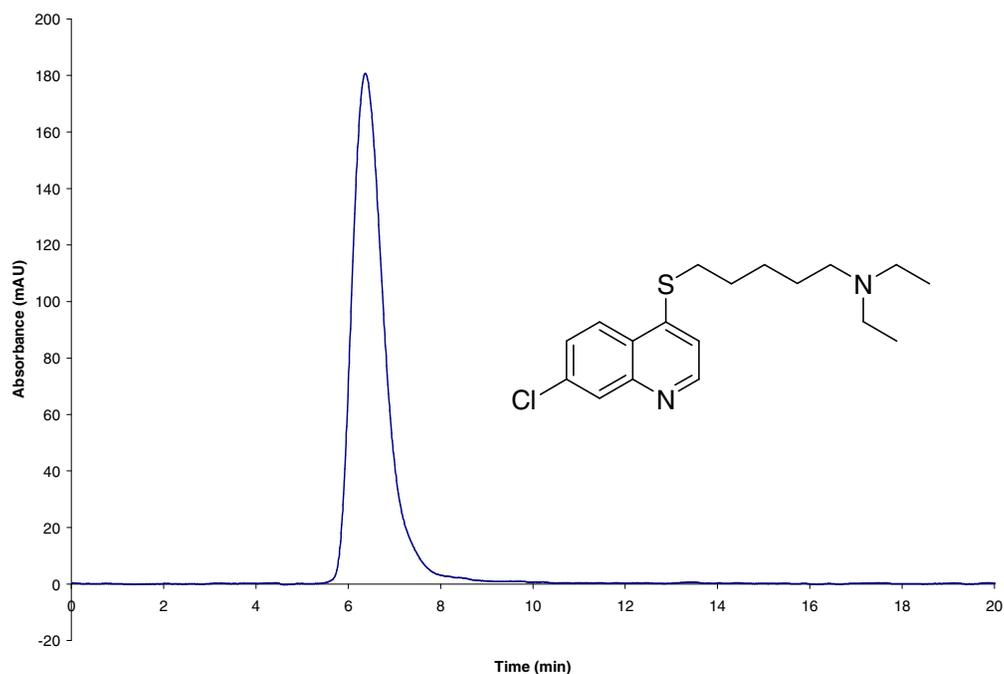


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

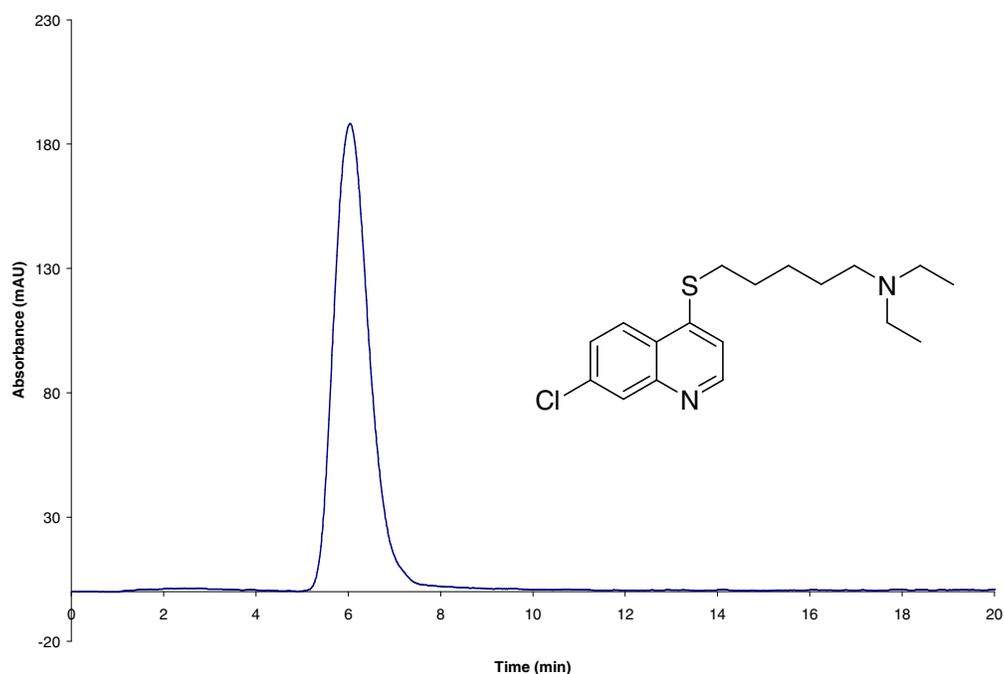
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *S*-(7-chloro-4-quinolyl)-5-(*N,N*-diethylamino)pentanethiol



## HPLC analysis of *S*-(7-chloro-4-quinolyyl)-5-(*N,N*-diethylamino)pentanethiol

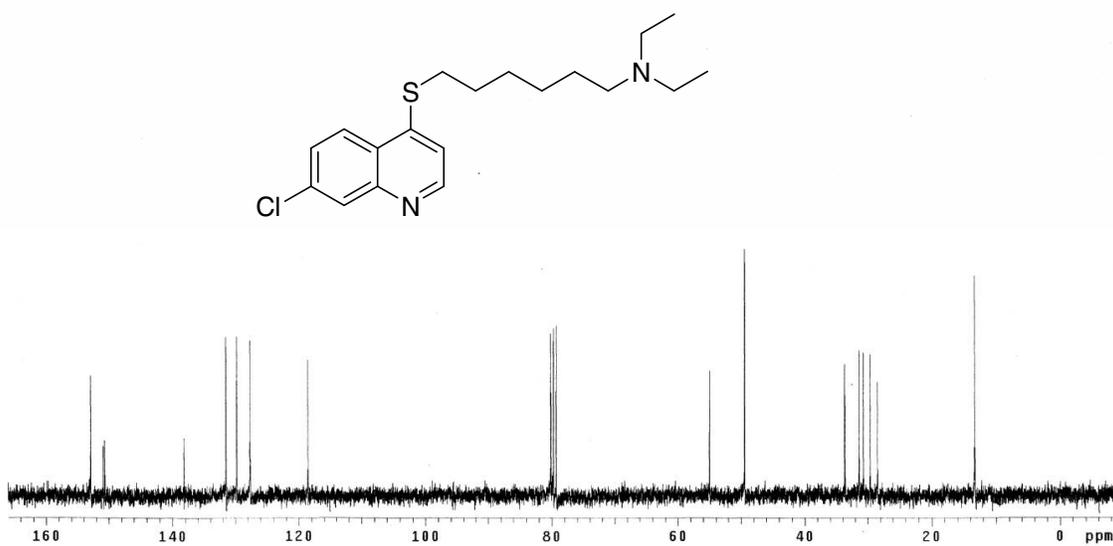
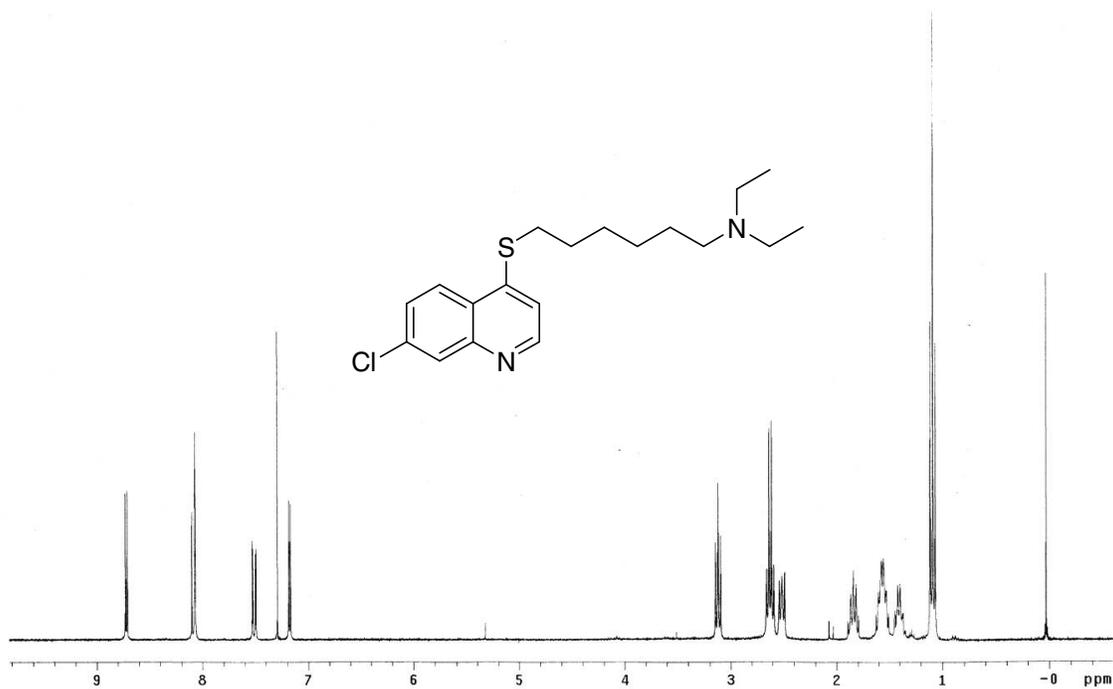


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 10  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

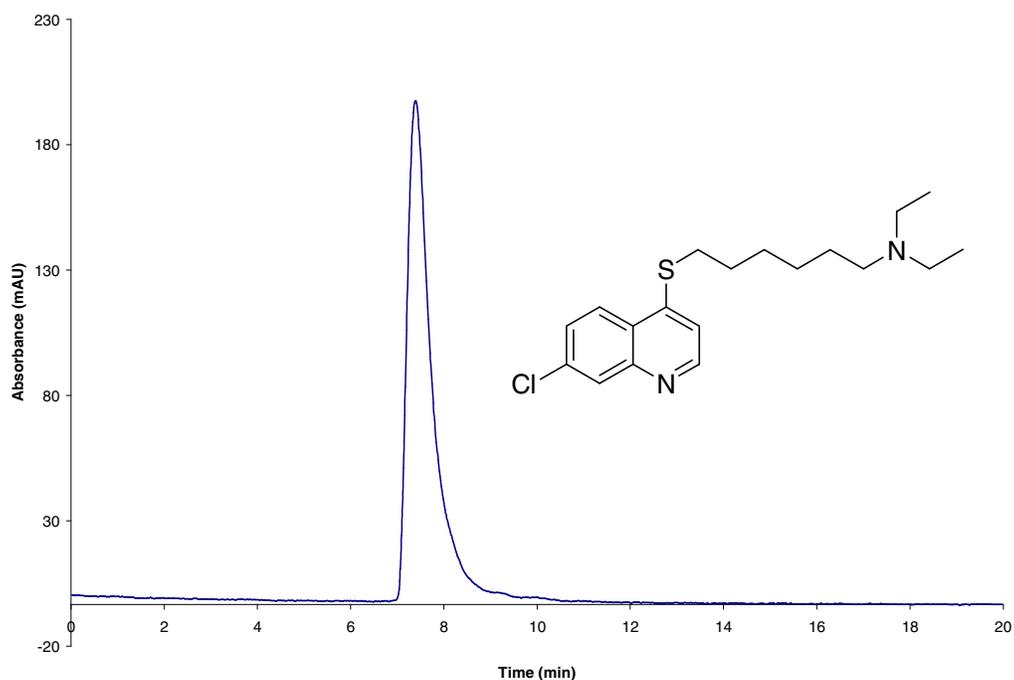


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 8  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

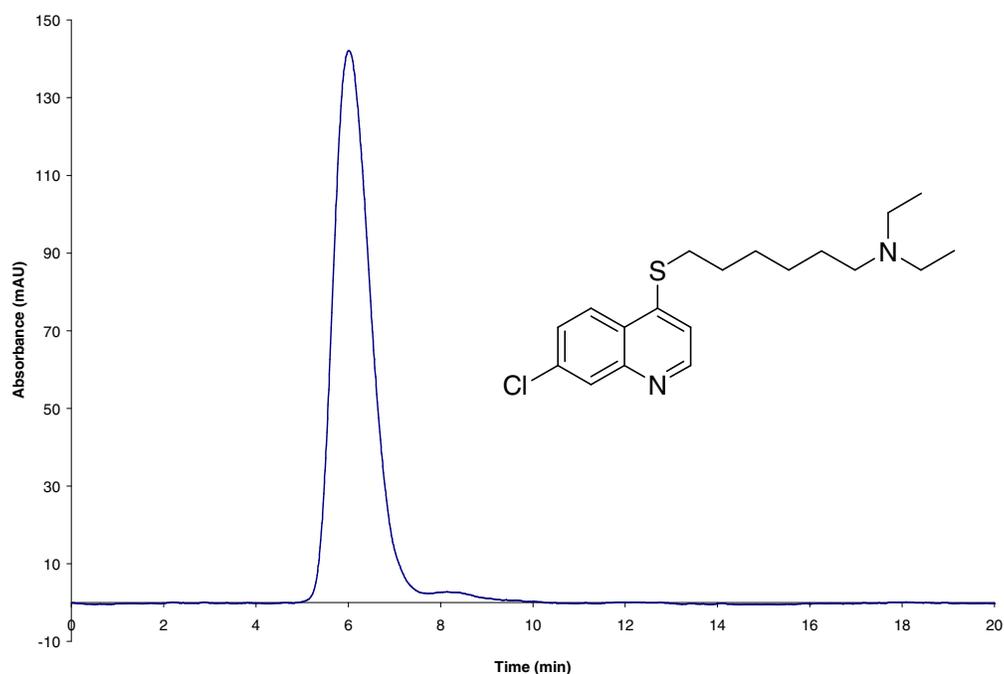
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of *S*-(7-chloro-4-quinolyl)-6-(*N,N*-diethylamino)hexanethiol



## HPLC analysis of *S*-(7-chloro-4-quinolyyl)-6-(*N,N*-diethylamino)hexanethiol

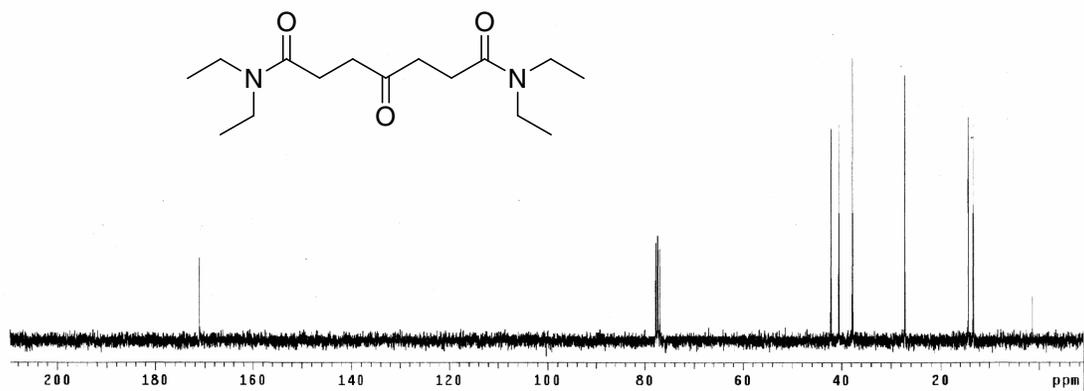
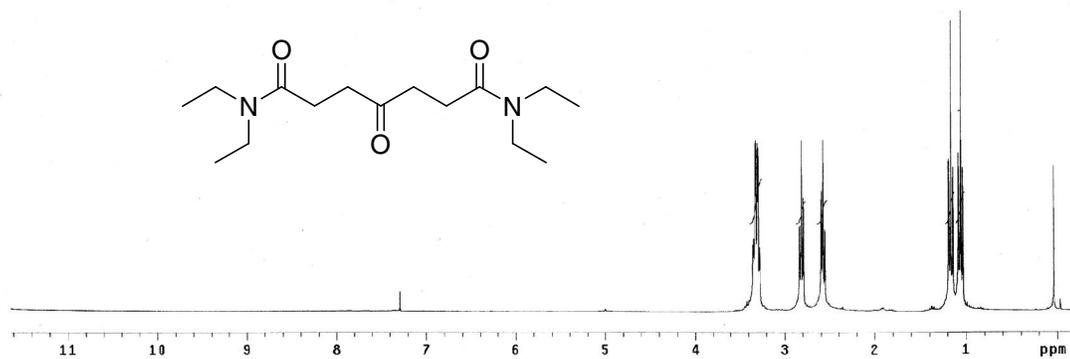


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 5  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

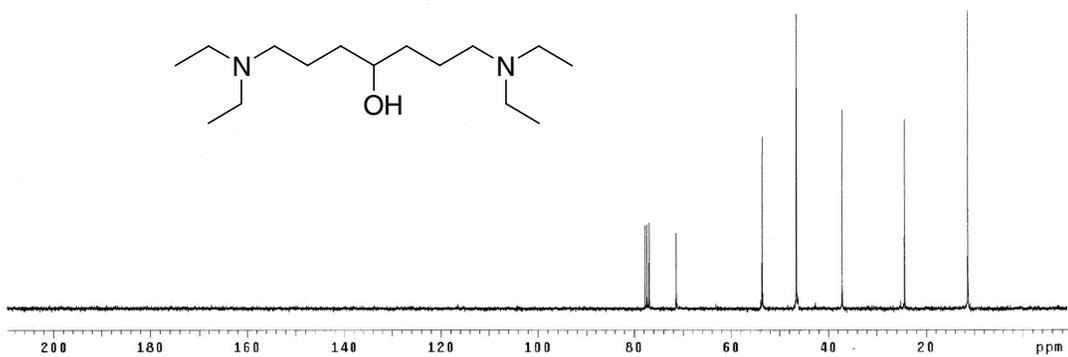
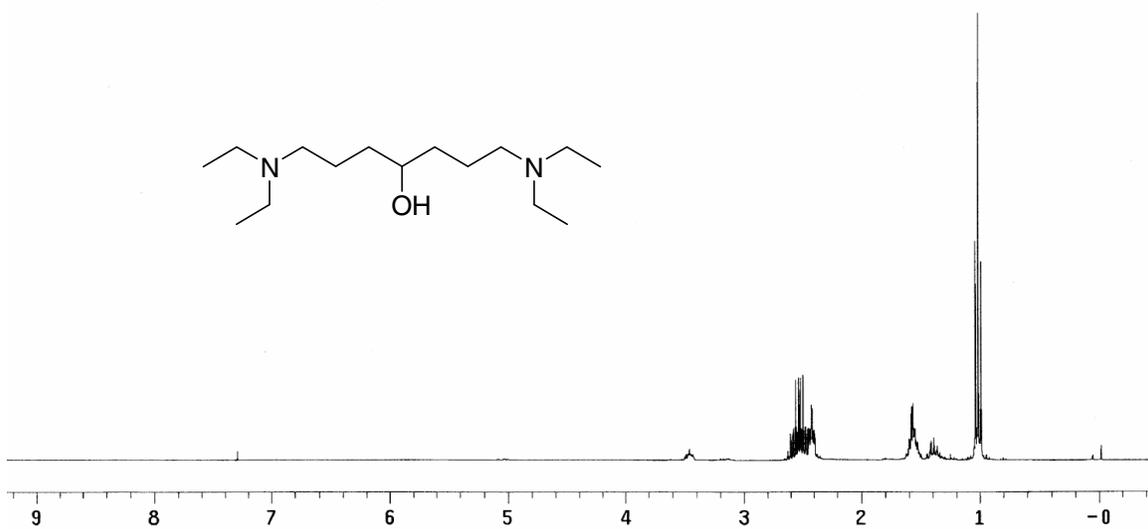


Conditions: Nucleosil NH<sub>2</sub> column (Alltech applied science), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 35  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

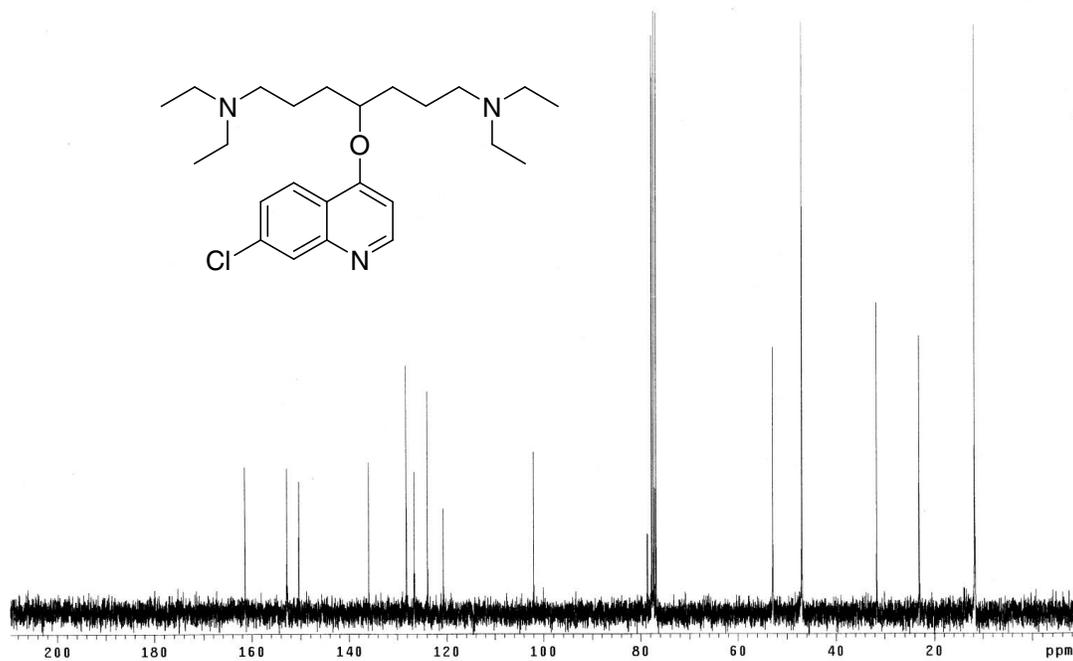
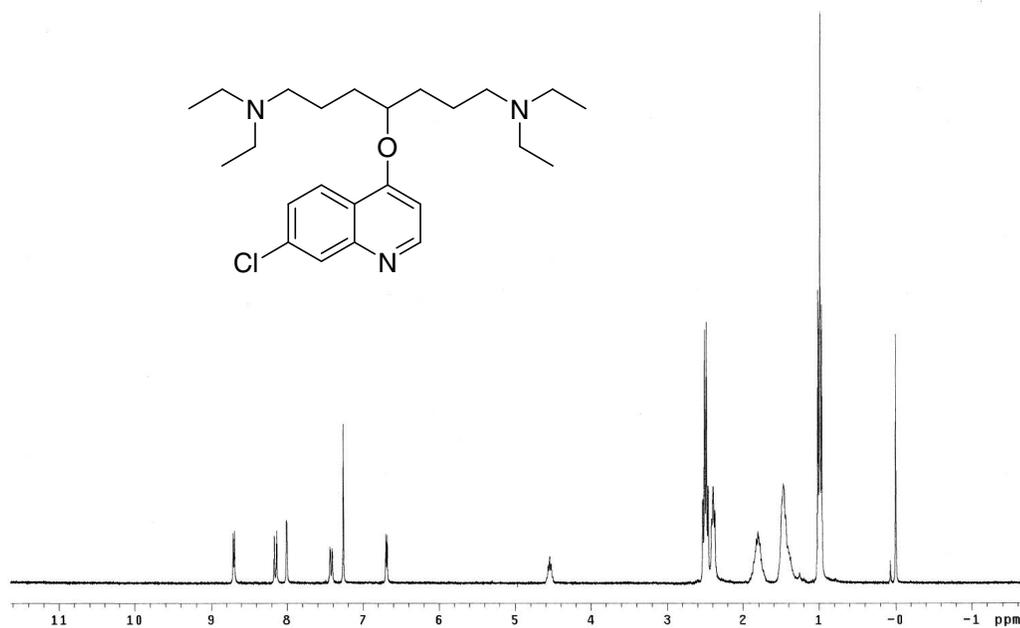
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of 1,7-bis(diethylamido)heptan-4-one



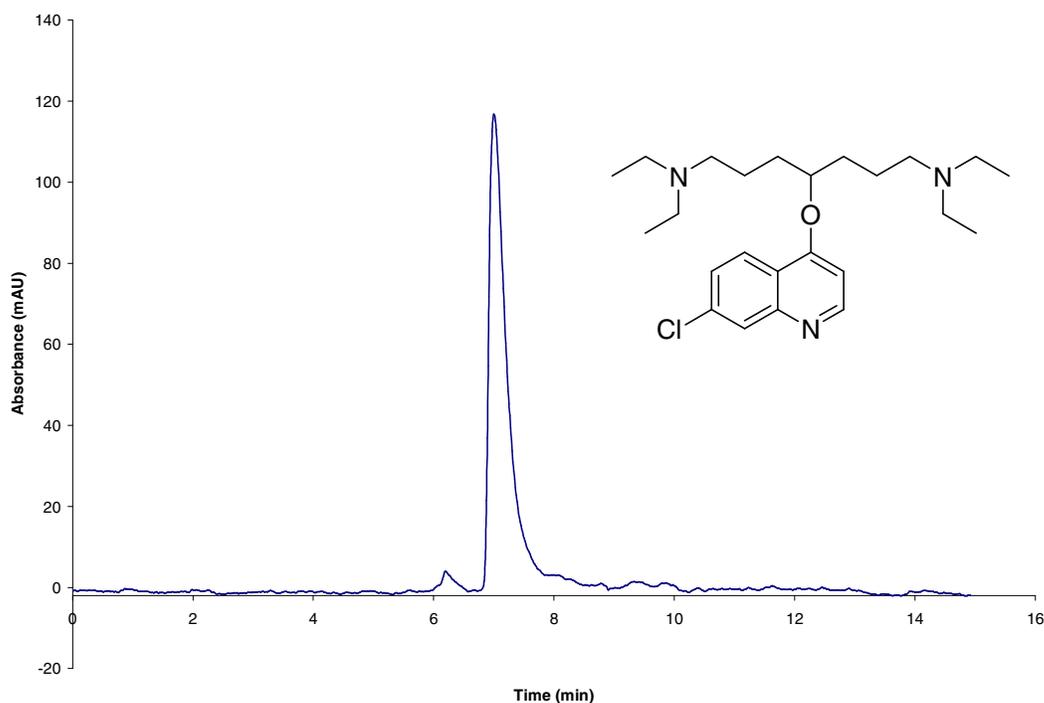
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of 1,7-bis(diethylamino)heptan-4-ol



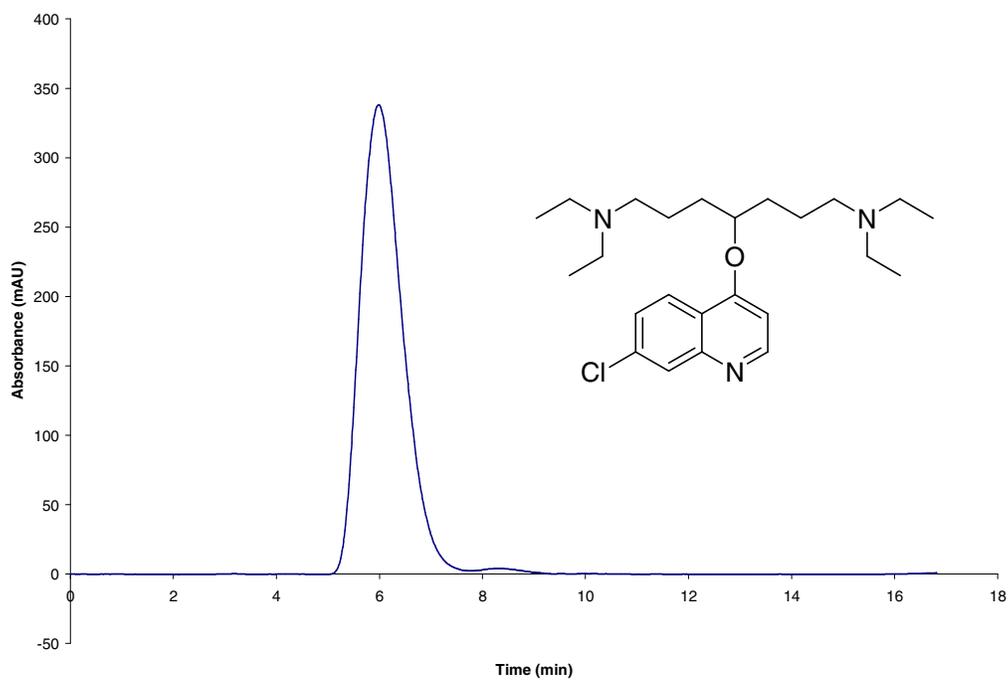
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of 7-Chloro-4-(1',7'-bis(diethylamino)-4'-heptoxy)quinoline



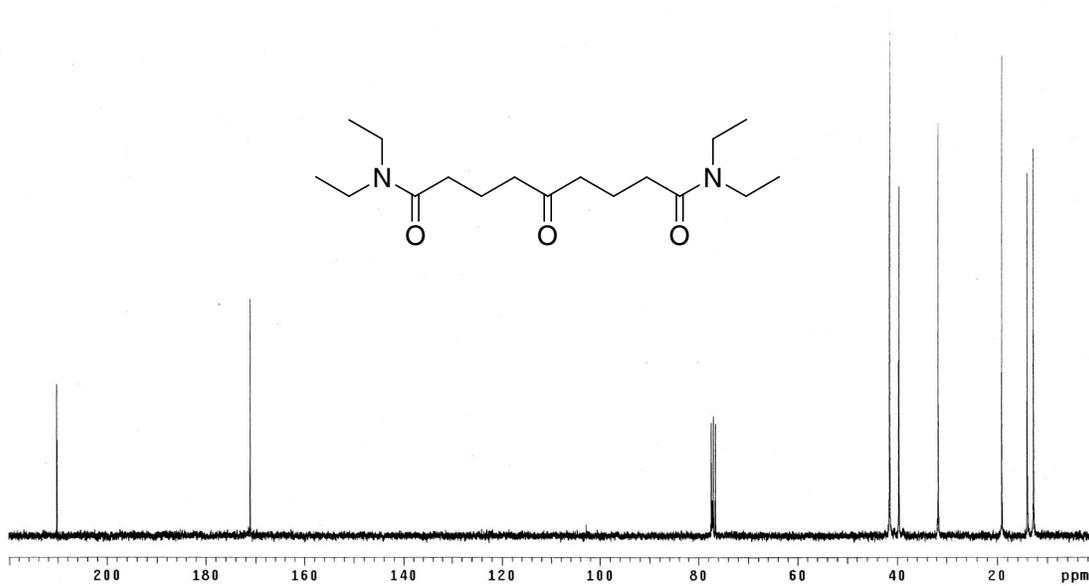
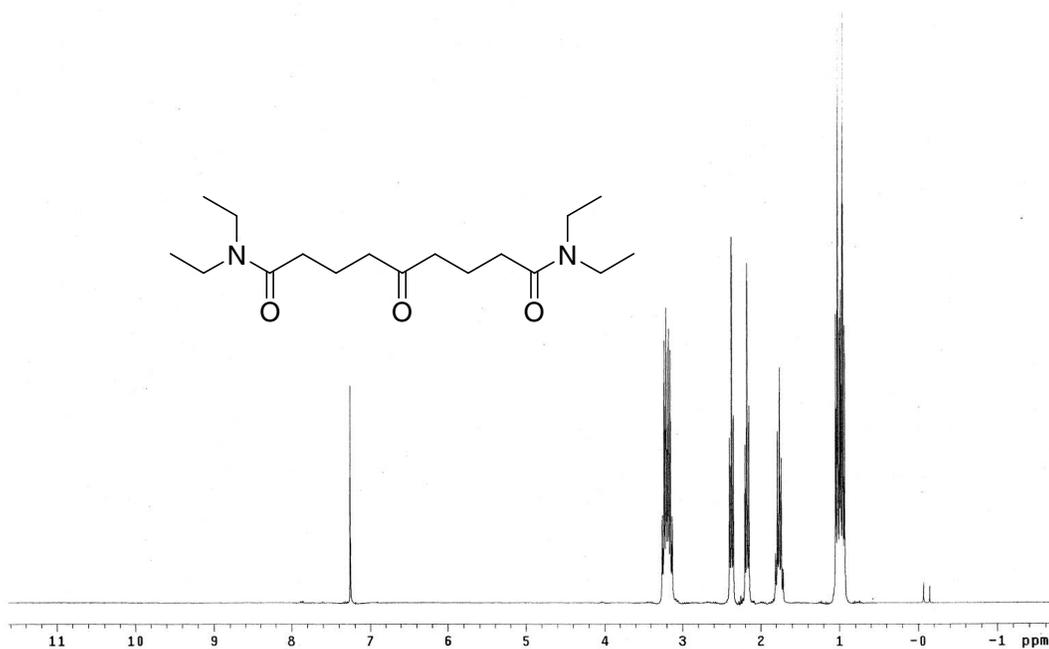
HPLC analysis of 7-Chloro-4-(1',7'-bis(diethylamino)-4'-heptoxy)quinoline



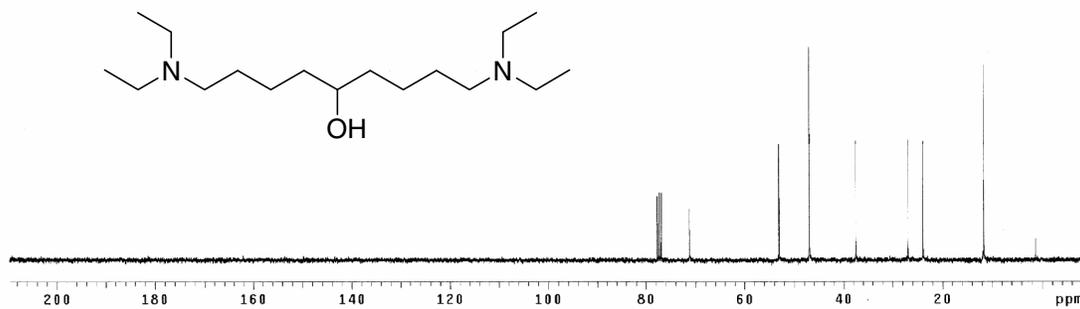
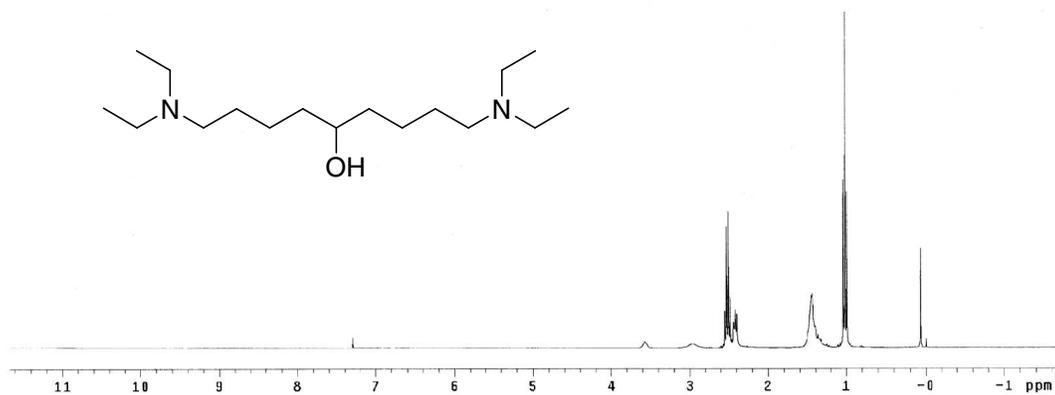
Conditions: C18 column (YMC-ODS-AQ), mobile phase: 50% acetonitrile, 50% water containing 0.1% trifluoroacetic acid, injection volume: 10  $\mu$ l, concentration: 2 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min



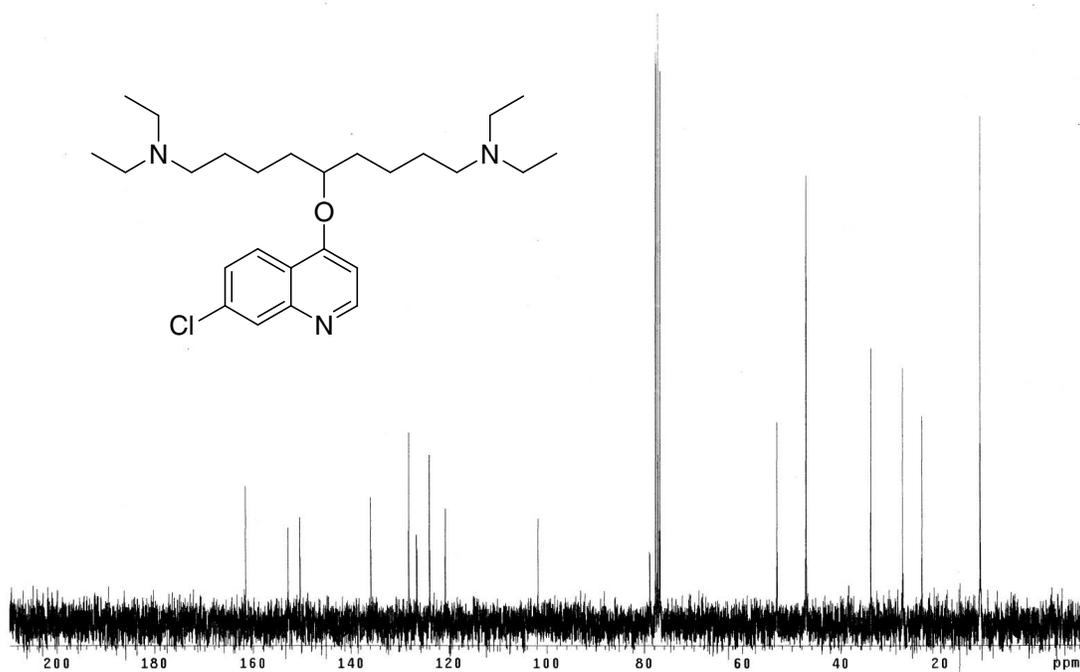
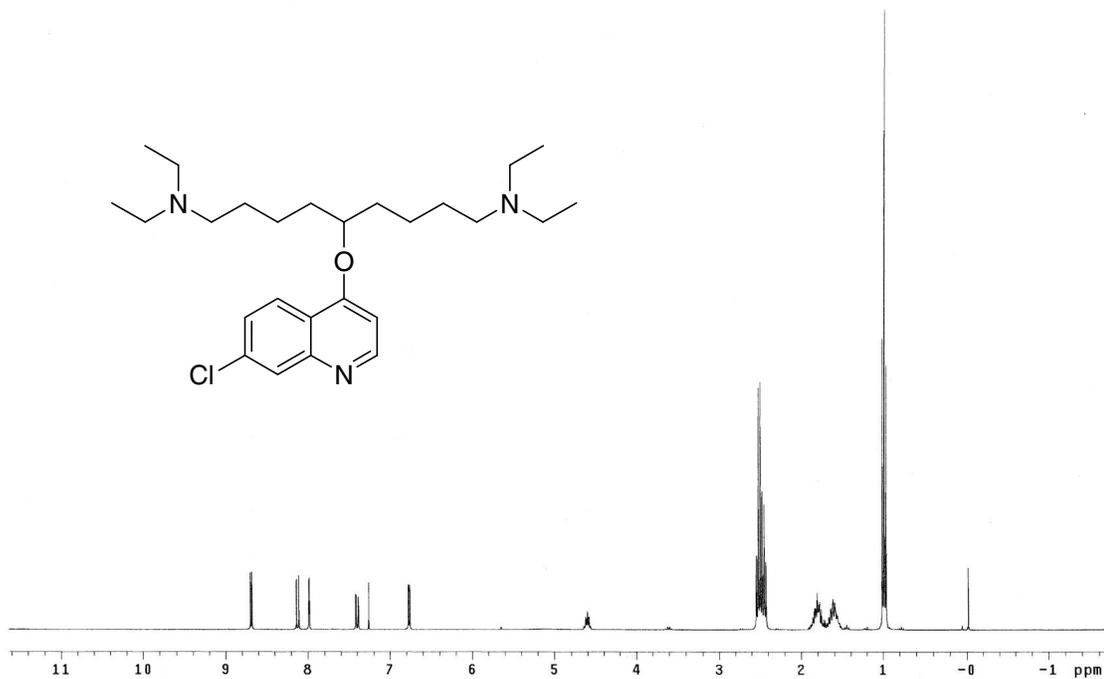
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of 1,9-bis(diethylamido)nonan-5-one



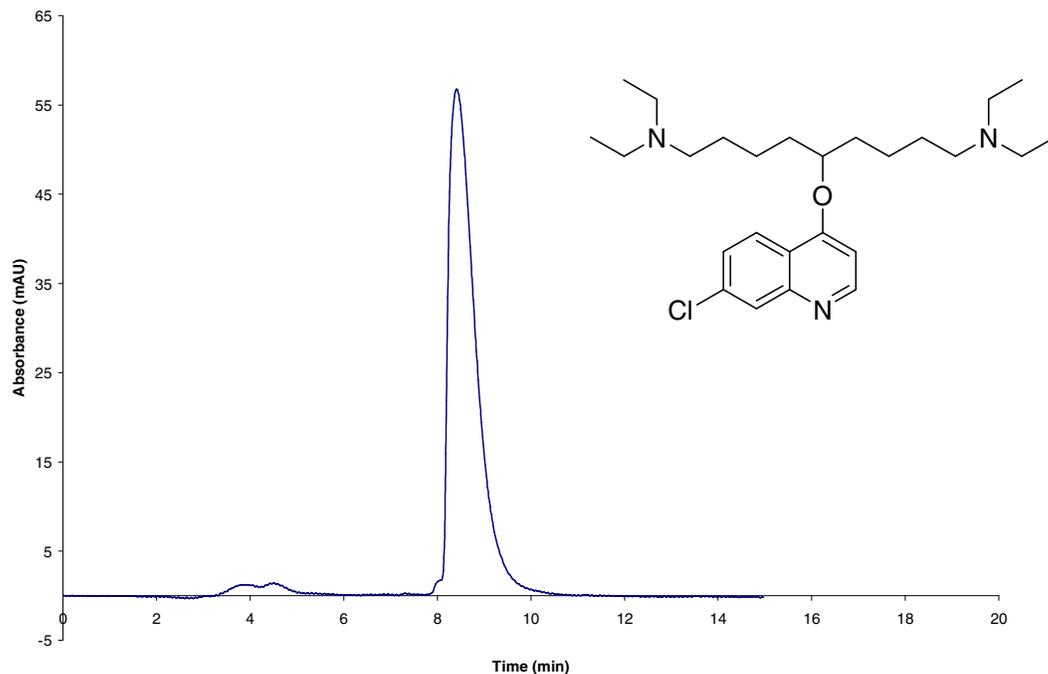
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of 1,9-bis(diethylamino)nonan-5-ol



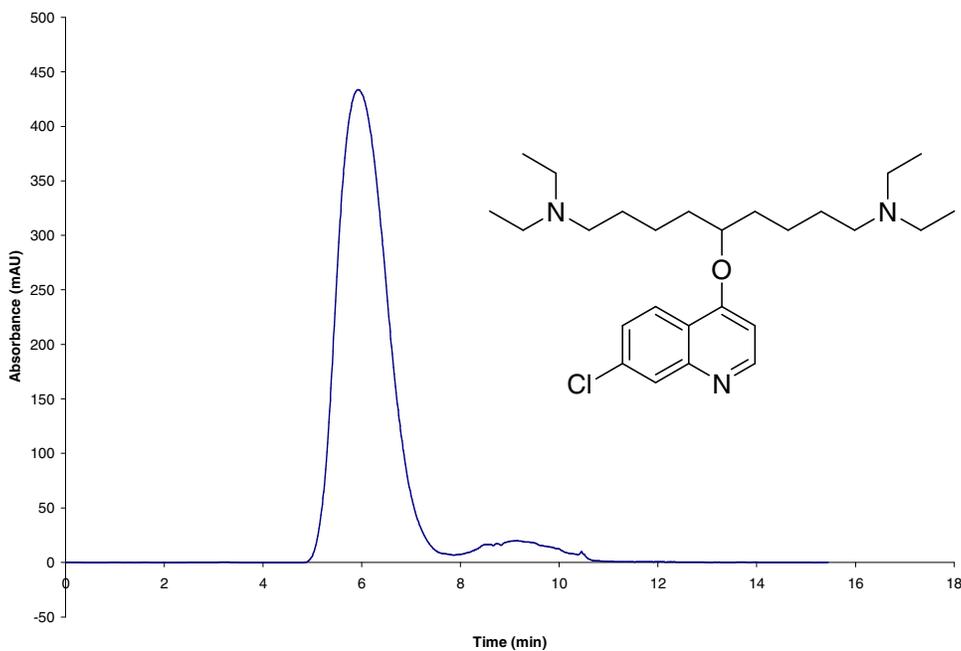
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of 7-chloro-4-(1',9'-bis(diethylamino)-5'-nonoxy)quinoline



HPLC analysis of 7-chloro-4-(1',9'-bis(diethylamino)-5'-nonoxy)quinoline

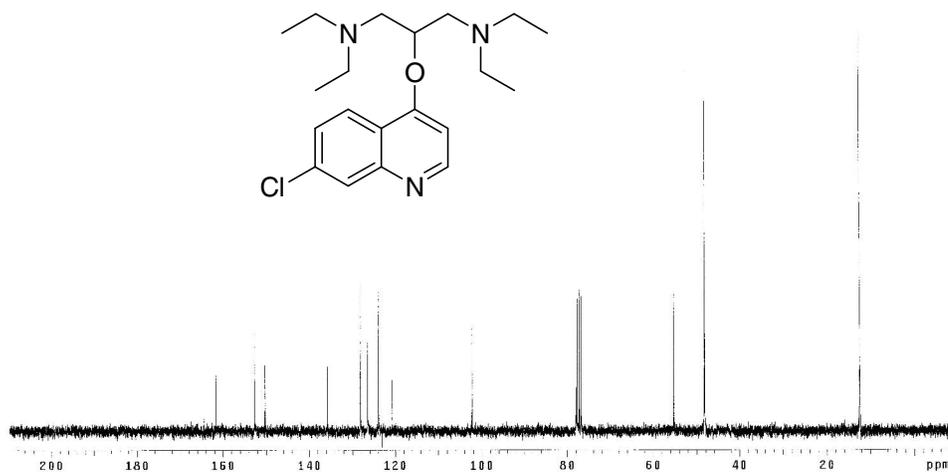
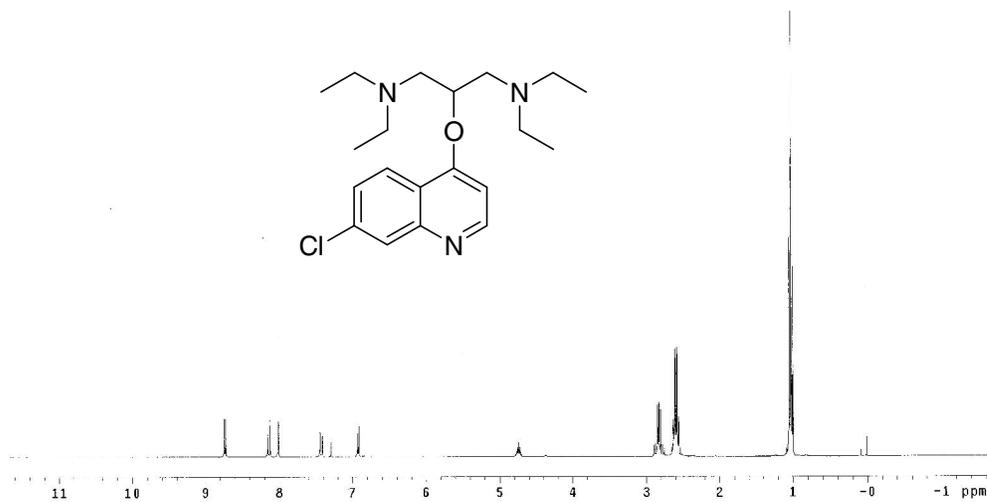


Conditions: C18 column (YMC-ODS-AQ), mobile phase: 50% acetonitrile, 50% water containing 0.1% trifluoroacetic acid, injection volume: 15  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

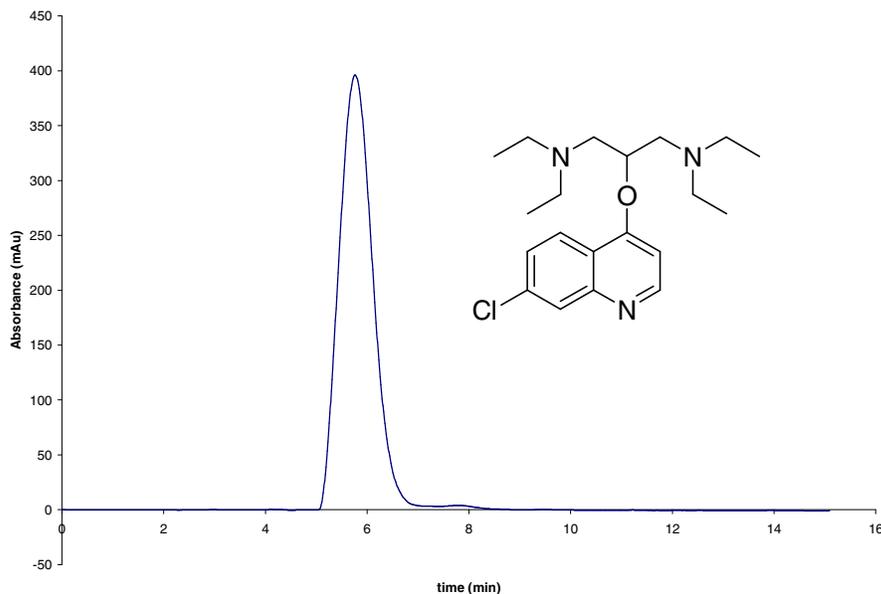


Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 80% acetonitrile, 20% water containing 0.1% trifluoroacetic acid, injection volume: 20  $\mu$ l, concentration: 3 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min

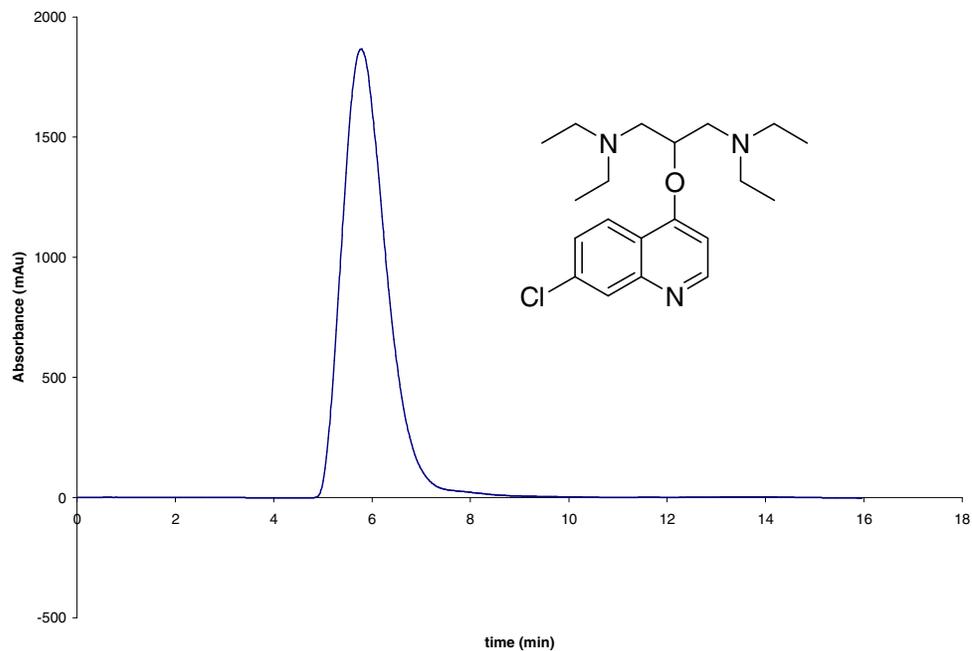
$^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) and  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) of 7-Chloro-4-(1',3'-bis(diethylamino)-2'-propoxy)quinoline



## HPLC analysis of 7-Chloro-4-(1',3'-bis(diethylamino)-2'-propoxy)quinoline



Conditions: C18 column (YMC-ODS-AQ), mobile phase: 60% acetonitrile, 40% water containing 0.1% trifluoroacetic acid, injection volume: 10  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min



Conditions: Nucleosil NH2 column (Alltech applied science), mobile phase: 70% acetonitrile, 30% water containing 0.1% trifluoroacetic acid, injection volume: 10  $\mu$ l, concentration: 1 mg/mL, UV detection: 254 nm, flow rate: 1 mL/min