

Supplementary Material

New quaternary ammonium derivatives based on citrus pectin

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Table S1. ^1H and ^{13}C NMR chemical shift values for **PC** and **PC-QEt38**

Type of atom	Polymer code	Type of atom	Polymer code
	PC		PC-QEt38
H-1 (COOH+COOCH ₃)	5.08	H-1	5.06
H-2 (COOH)	3.65	H-2	3.76
H-2 (COOCH ₃)	3.71	H-3	4.00
H-3 (COOH)	4.17	H-4	4.46
H-3 (COOCH ₃)	4.00	H-5	5.06
H-4 (COOH+COOCH ₃)	4.45	H-6	-
H-5 (COOH)	4.64	H-7	3.75-4.03
H-5 (COOCH ₃)	4.96	H-8	4.46
H-6	-	H-9	3.34-3.58
-OCH₃	3.80	H-10	3.12-3.19
		H-11	3.34-3.58
		H-12	1.35-1.39
		-OCH₃	3.76
C-1	103.21	C-1	102.58
C-2	70.75	C-2	70.96
C-3	70.75	C-3	70.73
C-4	81.33	C-4	81.05
C-5	73.56	C-5	73.17
C-6 (COOH)	176.90	C-6 (COOH)	175.48
C-6 (COOCH ₃)	173.65	C-6 (COOCH ₃)	168.97
-OCH₃	55.70	C-7	72.82
		C-8	64.22
		C-9	67.78
		C-10	54.10
		C-11	64.82
		C-12	10.37
		-OCH₃	53.36

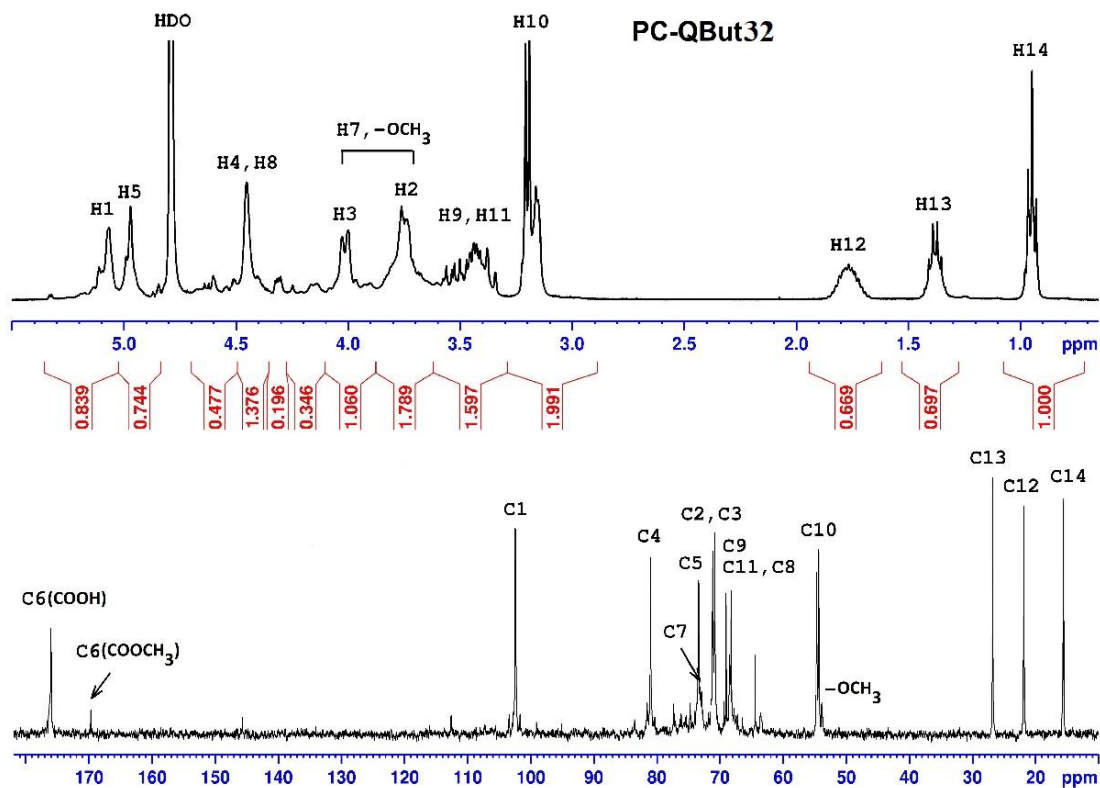


Figure S1. ^1H (up) and ^{13}C (down) NMR spectra of PC-QBut32 in D_2O , with signals assignment.

Table S2. ^1H and ^{13}C NMR chemical shift values for PC-QBut32

Polymer code	Chemical shift values, δ (ppm)			
	^1H NMR		^{13}C NMR	
	Hydrogen atom	δ (ppm)	Carbon atom	δ (ppm)
PC-QBut32	H-1	5.06	C-1	102.46
	H-2	3.73	C-2	71.15
	H-3	3.99	C-3	70.84
	H-4	4.45	C-4	81.02
	H-5	4.97	C-5	73.40
	H-6	-	C-6(COOH)	176.02
	H-7	3.73-4.02	C-6(COOCH ₃)	169.72
	H-8	4.40	C-7	72.86
	H-9	3.34-3.57	C-8	68.25
	H-10	3.15-3.20	C-9	69.03
	H-11	3.34-3.57	C-10	54.35
	H-12	1.76	C-11	68.48
	H-13	1.35-1.40	C-12	21.83
	H-14	0.92-0.96	C-13	26.79
	-OCH ₃	3.76	C-14	15.59
			-OCH ₃	53.92

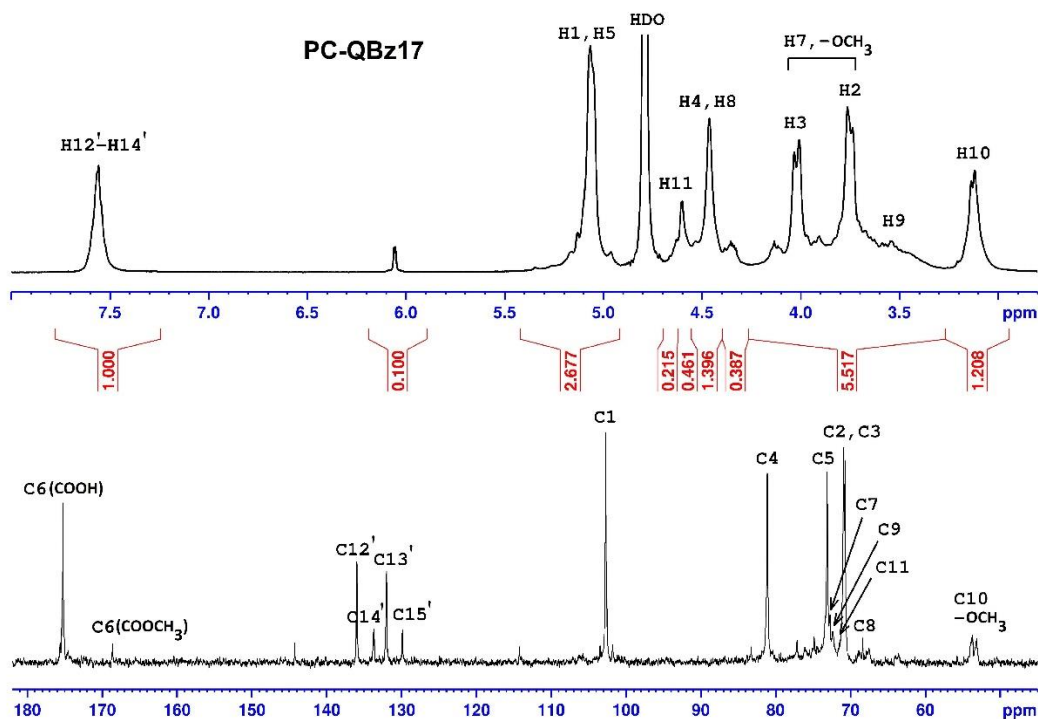


Figure S2. ¹H (up) and ¹³C (down) NMR spectra of PC-QBz17 in D₂O, with signals assignment.

Table S3. ¹H and ¹³C NMR chemical shift values for PC-QBz17

Polymer code	Chemical shift values, δ (ppm)			
	¹ H NMR		¹³ C NMR	
	Hydrogen atom	δ (ppm)	Carbon atom	δ (ppm)
PC-QBz17	H-1	5.06	C-1	102.71
	H-2	3.73	C-2	70.91
	H-3	4.00	C-3	70.73
	H-4	4.46	C-4	81.12
	H-5	5.06	C-5	73.11
	H-6	-	C-6(COOH)	175.24
	H-7	3.73-4.03	C-6(COOCH ₃)	168.62
	H-8	4.53	C-7	72.75
	H-9	3.54	C-8	68.35
	H-10	3.11-3.13	C-9	72.40
	H-11	4.60	C-10	53.71
	H-12'	7.56	C-11	71.49
	H-13'	7.56	C-12'	135.96
	H-14'	7.56	C-13'	131.99
	-OCH ₃	3.76	C-14'	133.67
			C-15'	129.89
			-OCH ₃	53.12

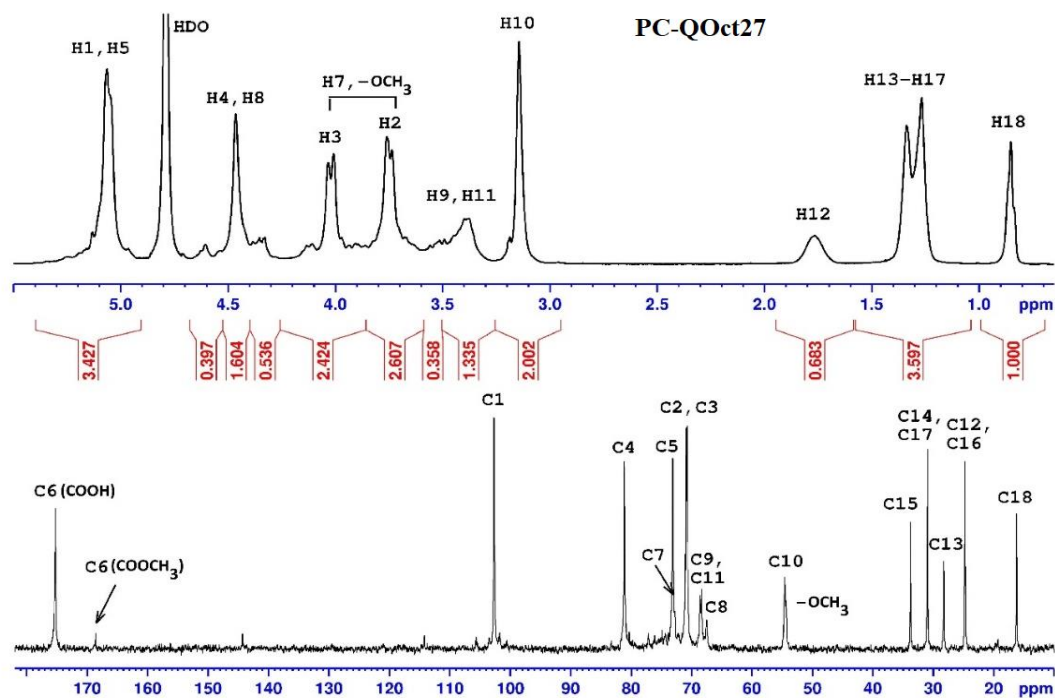


Figure S3. ^1H (up) and ^{13}C (down) NMR spectra of PC-QOct27 in D_2O , with signals assignment.

Table S4. ^1H and ^{13}C NMR chemical shift values for PC-QOct27

Polymer code	Chemical shift values, δ (ppm)			
	^1H NMR		^{13}C NMR	
	Hydrogen atom	δ (ppm)	Carbon atom	δ (ppm)
PC-QOct26	H-1	5.06	C-1	102.68
	H-2	3.73	C-2	70.90
	H-3	4.00	C-3	70.72
	H-4	4.46	C-4	81.11
	H-5	5.06	C-5	73.11
	H-6	-	C-6(COOH)	175.25
	H-7	3.75-4.03	C-6(COOCH ₃)	168.62
	H-8	4.46	C-7	72.74
	H-9	3.37-3.56	C-8	67.48
	H-10	3.14-3.18	C-9	68.61
	H-11	3.37-3.56	C-10	54.59
	H-12	1.76	C-11	68.35
	H-13 – H-17	1.26-1.33	C-12	24.77
	H-18	0.85	C-13	28.23
	-OCH ₃	3.76	C-14	30.92
			C-15	33.75
			C-16	24.77
			C-17	30.92
			C-18	16.19
			-OCH ₃	54.33

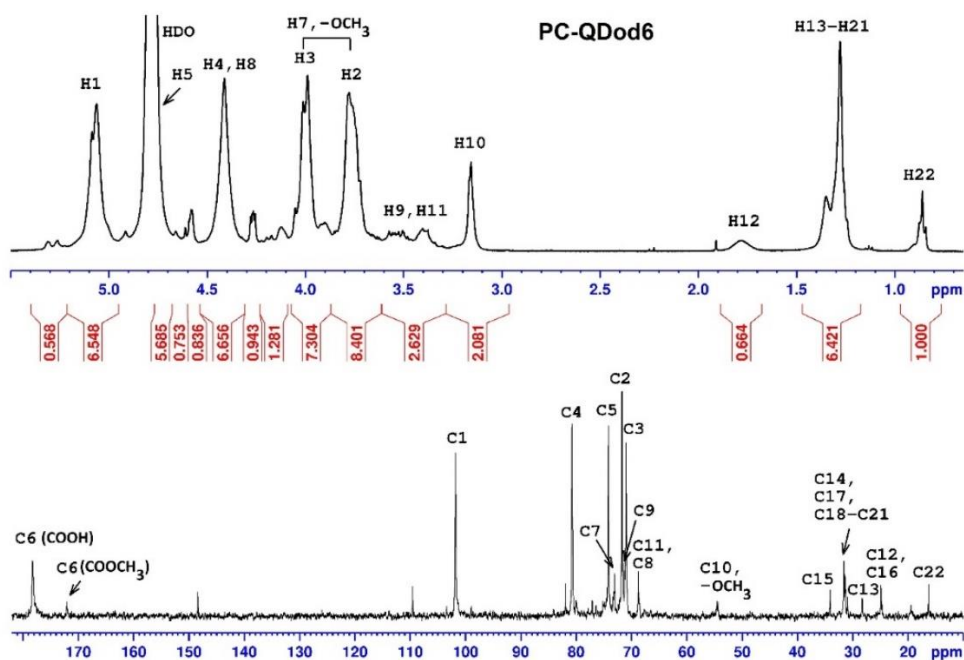


Figure S4. ^1H (up) and ^{13}C (down) NMR spectra of PC-QDod6 in D_2O , with signals assignment.

Table S5. ^1H and ^{13}C NMR chemical shift values for PC-QDod6

Polymer code	Chemical shift values, δ (ppm)			
	^1H NMR		^{13}C NMR	
	Hydrogen atom	δ (ppm)	Carbon atom	δ (ppm)
PC-QDod6	H-1	5.06	C-1	101.83
	H-2	3.76	C-2	71.71
	H-3	3.98	C-3	70.99
	H-4	4.41	C-4	80.76
	H-5	4.76	C-5	74.17
	H-6	-	C-6(COOH)	178.27
	H-7	3.76-4.01	C-6(COOCH ₃)	172.03
	H-8	4.41	C-7	73.06
	H-9	3.37-3.57	C-8	68.77
	H-10	3.15	C-9	71.24
	H-11	3.37-3.57	C-10	54.59
	H-12	1.77	C-11	68.77
	H-13 – H-21	1.27-1.35	C-12	24.91
	H-22	0.85	C-13	28.28
	-OCH ₃	3.77	C-14, C-17, C-18 – C21	30.97-31.60
			C-15	34.06
			C-16	24.78
			C-22	16.29
			-OCH ₃	54.34