Electronic Supplementary Information

Tyrosine Based Cationic Acrylates as potent Antimicrobial Agent

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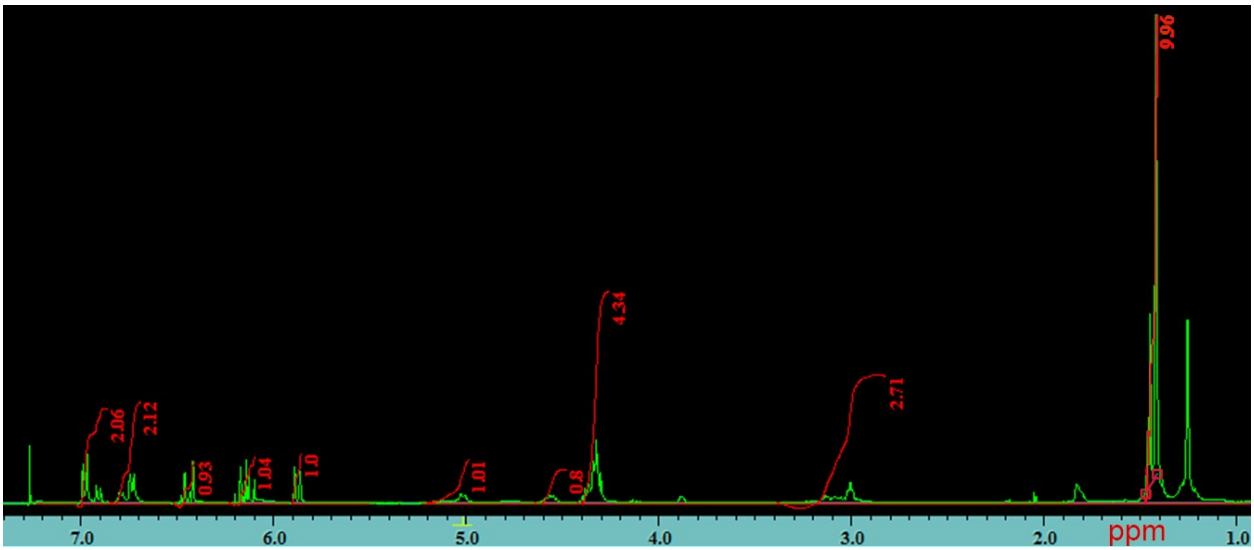

Figure S1. ^{1}H NMR spectrum of monomer in $CDCl_3$,

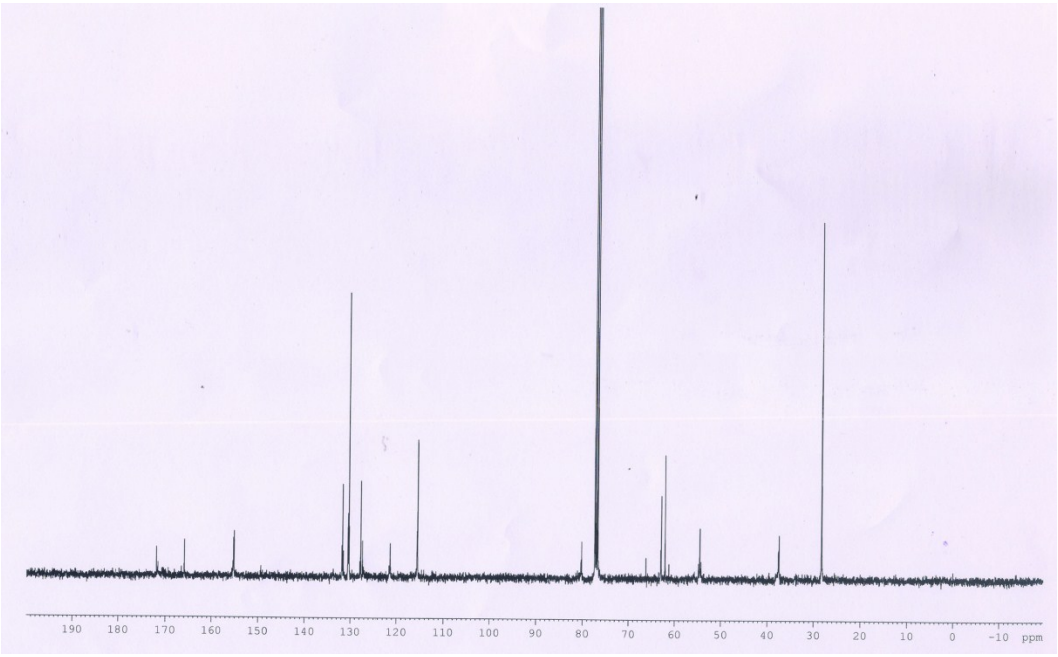

Figure S2. ^{13}C NMR spectrum of monomer in $CDCl_3$,

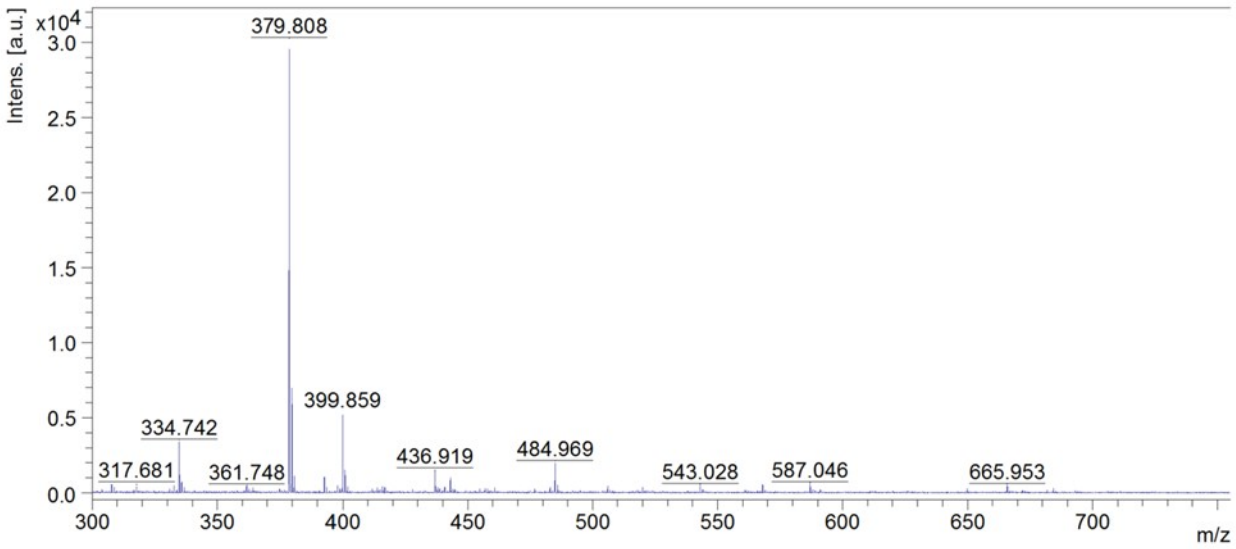

Figure S3. MALDI-Tof spectrum of monomer

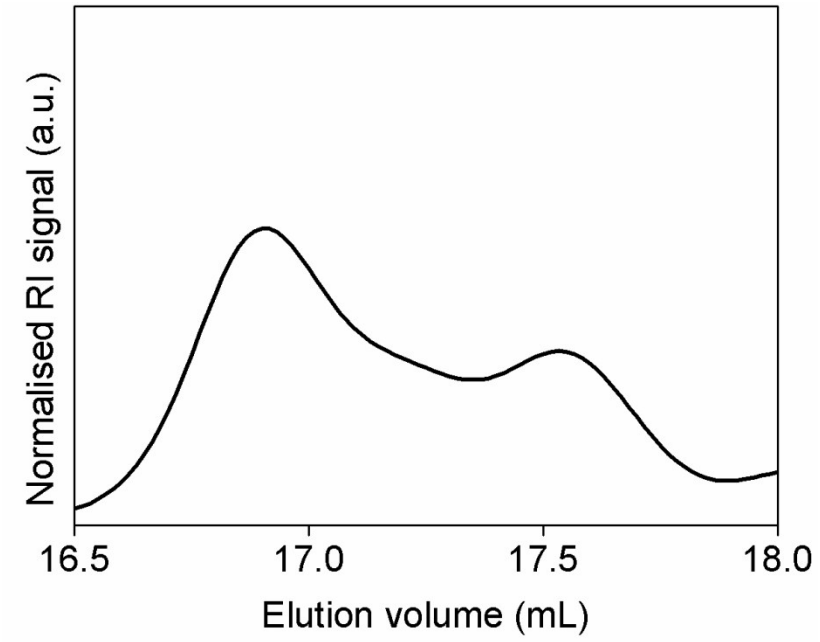

Figure S4. GPC RI traces of the homopolymers synthesized via free radical polymerization technique.

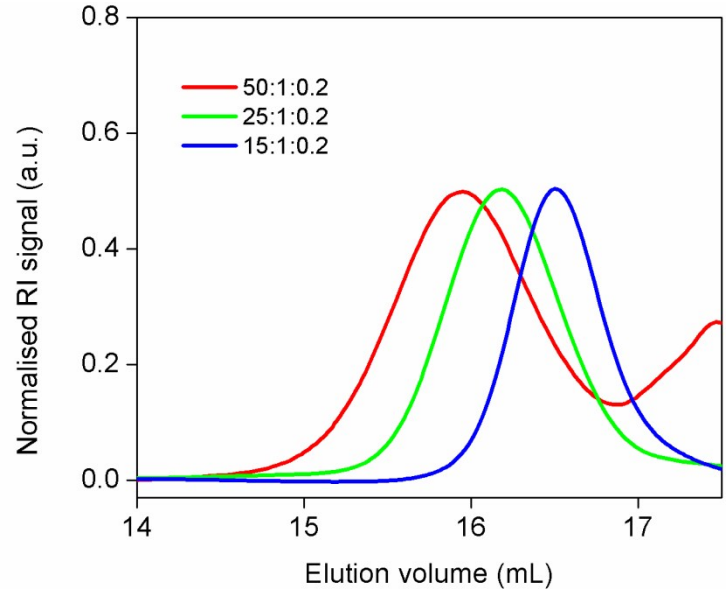

Figure S5. GPC RI traces of the homopolymers synthesized using CTP as chain transfer agent (CTA).

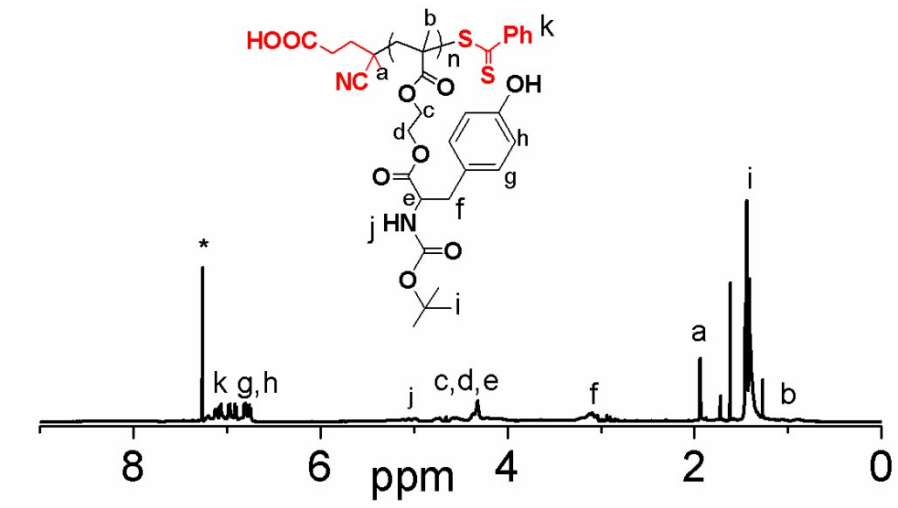

Figure S6. ^{1}H NMR spectra of the homopolymer synthesized using CTP as chain transfer agent (CTA) in $CDCl_3$.

Table S1. Results from the synthesis of P(Boc-Tyr-HEA) homopolymer with CDP as CTA in DMF at 70 ^{0}C.

Expt. No.	[M]/[CTA]/[AIBN]	Time (h)	Conv.[b] (%)	$M_{n,\ GPC}$[c] (g/mol)	$Đ$	$M_{n,\ NMR}$[d] (g/mol)	$M_{n,theo}$[e] (g/mol)
1	15:1:0.2[a] (P15)	7	71	5100	1.13	4500	4000
2	25:1:0.2[a](P25)	7	68	7800	1.27	7000	6420
4	50:1:0.2[a](P50)	7	76	12700	1.37	ND	14400
5	75:1:0.2[a](P75)	7	72	20500	1.49	ND	25000

[a][Monomer (M)]/[CTA]/[AIBN]=(Boc-Tyr-HEA)/[CDP]/[AIBN]., [b]Determined by gravimetric analysis. [c]Measured by GPC. [d]Obtained from ^{1}H NMR study. [e]$M_{n,theo}$ = (([M]/[CTA] × molecular weight (M_W) of M × conversion) + (M_W of CTA)). ND= Not determined.

Table S2. Solubility of P(Boc-Tyr-HEA) and P(H_3N^+-Tyr-HEA) in different solvents.[a]

Solvent	P(Boc-Tyr-HEA)	P(H_3N^+-Tyr-HEA)
Water	-	+
Hexanes	-	-
Pet ether	-	-
Diethyl ether	-	-
Ethyl acetate	+	-
Benzene	+	-
Toluene	+	-
THF	+	-
DMF	+	+
DMSO	+	+
Methanol	+	+
Ethanol	+	+
Dichloromethane	+	-
Acetone	+	+
Acetonitrile	+	-
Chloroform	+	-
Dioxane	+	-

[a]The symbols (+) and (-) indicate soluble and insoluble, respectively.

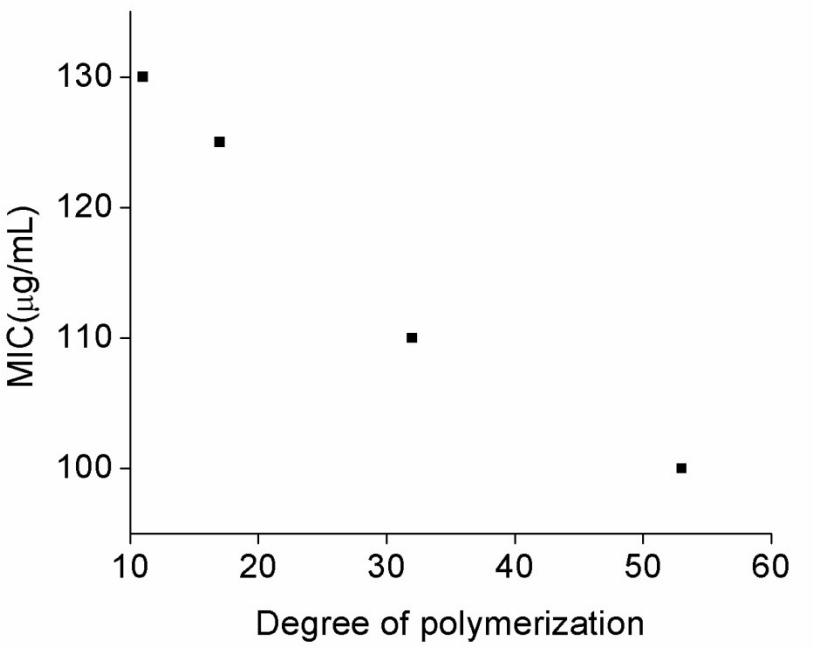

Figure S7. Antimicrobial activity of P15, P25, P50 and P75 cationic homopolymers

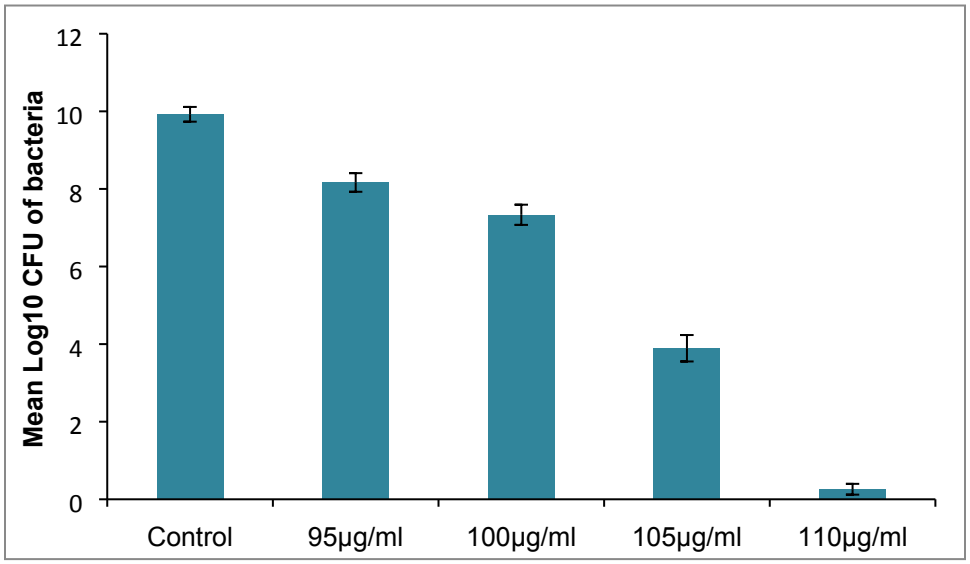

Figure S8. MIC and MBC of P75 polymer against *S. flexneri* cell line

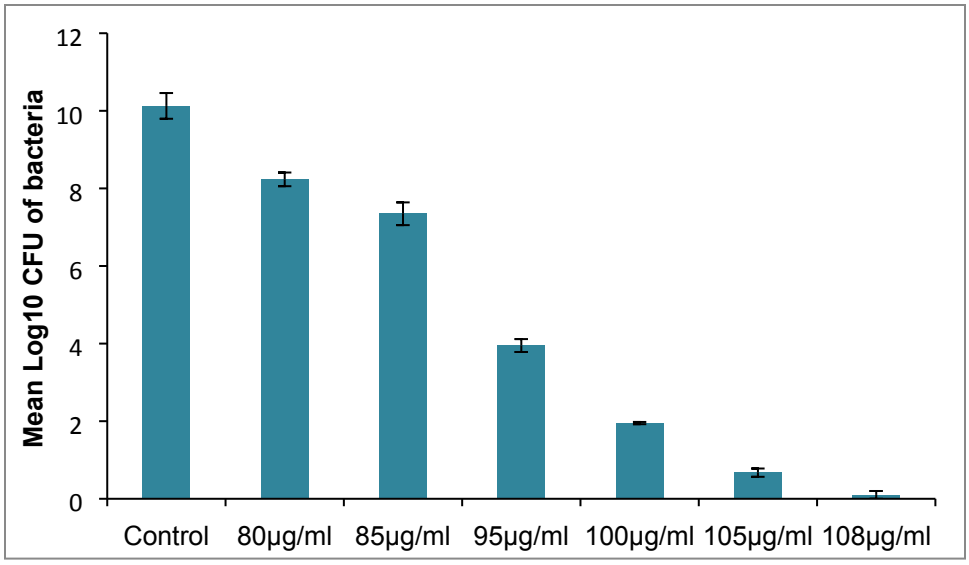

Figure S9. MIC and MBC of P75 polymer against *E. coli* cell line

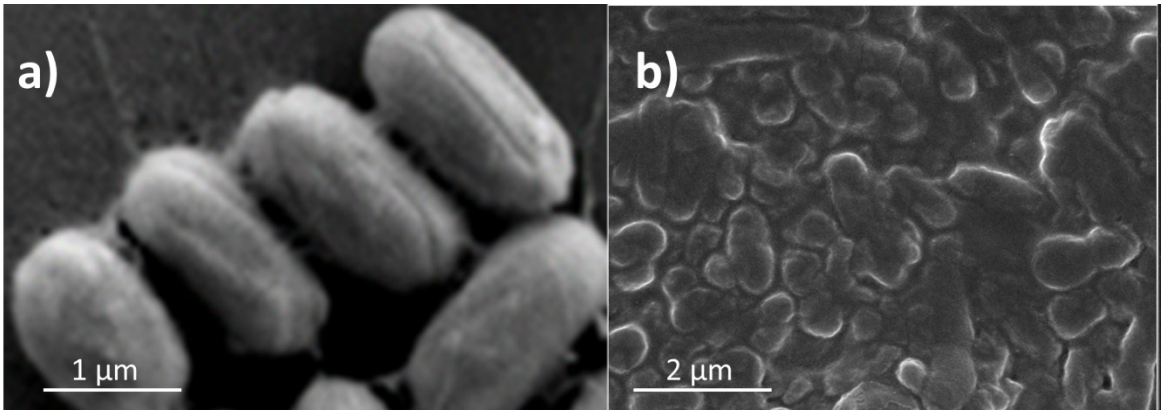

Figure S10. FESEM images of E. coli cell a) control cells without any treatment. b) after treatment with P75 polymer at their MBC value

Table S3.Quantitative values of Zone of inhibition of P75 against *A.niger*.

Polymer	Concentration (µg/mL)	Radius of zone of inhibition (R) (cm)	Area of zone of inhibition (cm^2)[a]

P(H_3N^+-Tyr-HEA)	15	0.65	1.29
	20	0.8	1.97
	50	1.01	3.17

Zone of inhibition = $\pi(R^2-r^2)$, R = radius of zone of inhibition, r = radius of well = 0.1 cm.

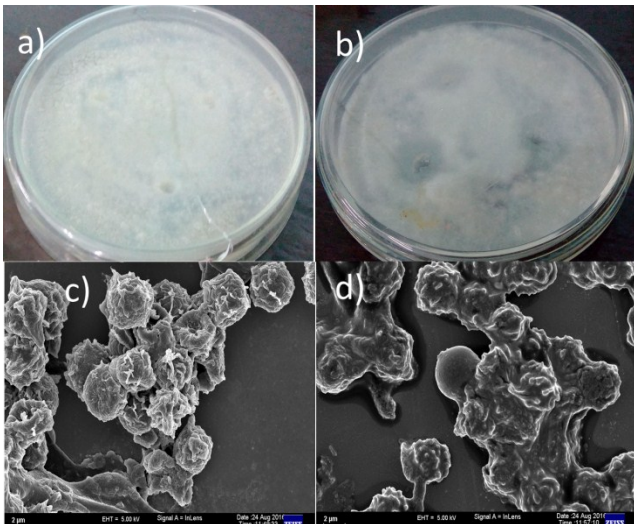

Figure S11. Zone of inhibition study of P75 over *A. niger* cells a) control cells, b) cells treated with polymer, c) control *A. niger* cells, b) polymer treated cells within zone of inhibition

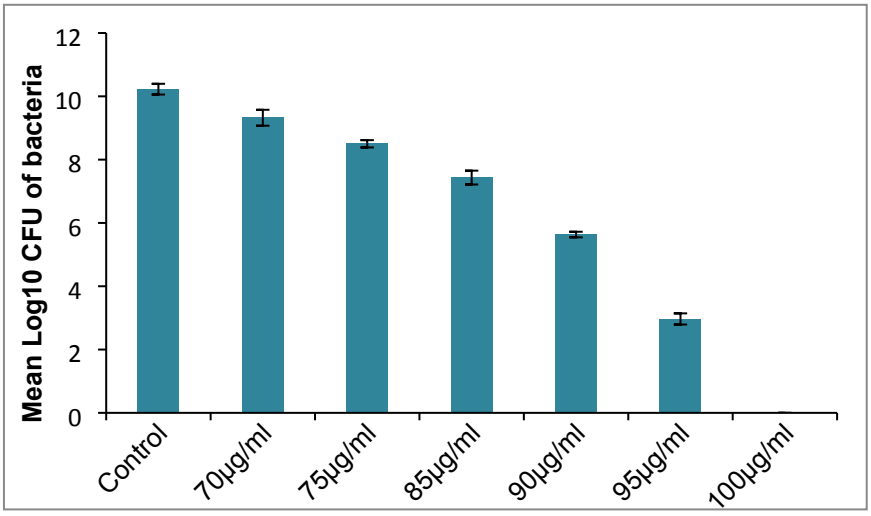

Figure S12. MIC and MBC value determination of P75 over MRSA 33591 strain

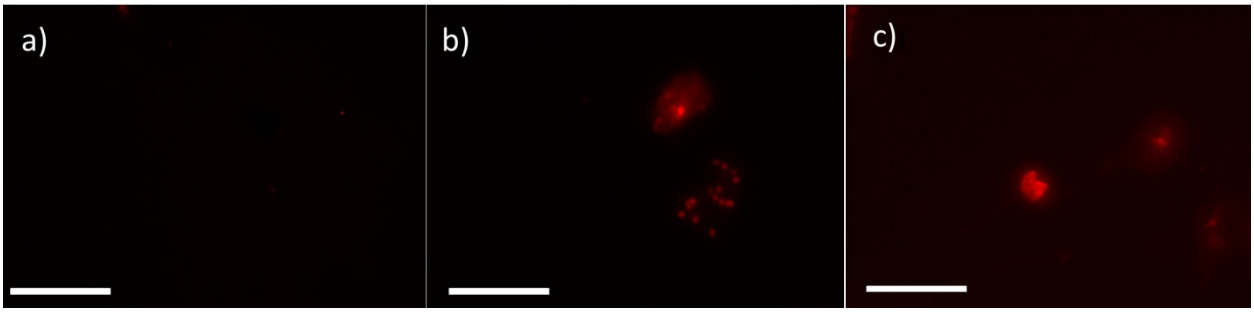

Figure S13. Fluorescence microscopy images of *S. aureus* after staining with PI exposed to the a) control cells, b) cells treated with polymer at their MIC value, c) cells treated with polymer at their MBC value. Scale bar 5 is μm.

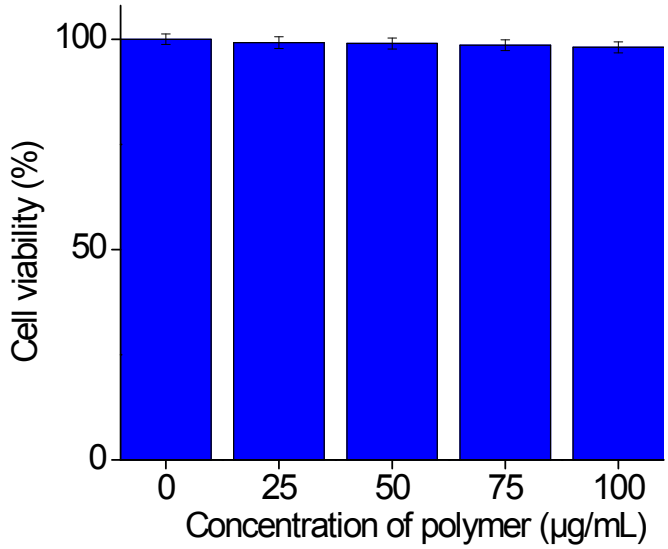

Figure S14. Cytotoxicity assay of P75 polymer in HeLa cell line