Protocol for primer extension.

Primer extension reactions were performed by the linear amplification methods (V. Murray, 1989, Nucleic Acids Research, 17, 8889). Briefly, 2 μL of a solution of pT7-7, treated with Cu-aminoglycosides, was added to a solution containing 16.6 mM $(NH_4)_2SO_4$, 67 mM Tris-HCl, pH 8.8, 6.7 mM $MgCl_2$, 0.2 mg/mL BSA, 300 μM of each dNTP, 0.05 pmol of the primer (5′-TAATACGACTCACTATAG-3′), 0.5 U Taq polymerase in a final volume of 5 μL. Dideoxy DNA sequencing methods were also performed using the uncut plasmid. Linear amplification by thermal cycling was carried out at 95 C for 30 s, 50 C for 60 s, and 72 C for 90 s for 25 cycles in a PCR instrument (Ericomp, Deltacycler II system). Two μL of the reaction was loaded onto a 6% denaturing polyacrylamide sequencing gel.

Table. Transformation efficiencies by T4 DNA ligase assay.

Expt.	Conditions	% Transformation in DH5α cells
1	Supercoiled pT7-7	100
2	1 + BamH1	< 10
3	2 + T4 DNA ligase	86
4	pT7-7 + Cu-(kan A)	30
5	4 + T4 DNA ligase	71
6	4 + H_2O_2	0
7	6 + T4 DNA ligase	0

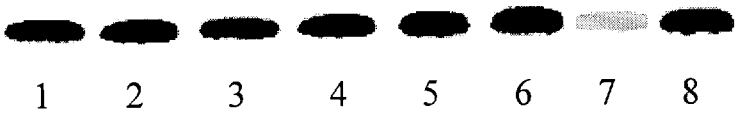

Figure S1. Cleavage of supercoiled plasmid DNA by metal kanamycin A derivatives. Lanes 1, DNA + 5 μM kan A; 2, + V-(kan A); 3, Fe-(kan A); 4, Mn-(kan A); 5, Co-(kan A); 6, Ni-(kan A); 7, Cu-(kan A); 8, Zn-(kan A). Each reaction mixture contained 51.1 μM DNA (base pair concentration), 1 μM metal kanamycin A complex and were incubated for 1 h at 37 °C.

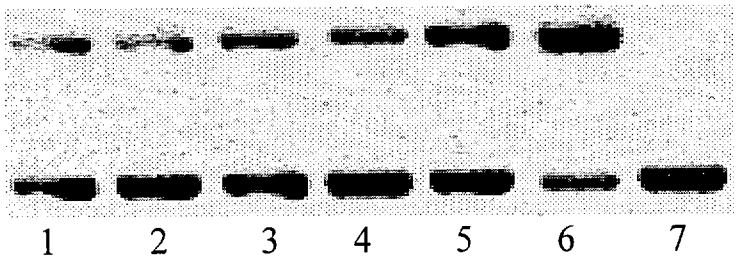

Figure S2. Cleavage of plasmid DNA, pT7-7 (50 μM, bp) with varying concentration of Cu-neamine in 10 mM HEPES, pH 7.3, 37 °C and incubated for 120 min. Lanes: 1, + 5 μM Cu^{2+}-neamine; 2, +10 μM Cu^{2+}-neamine; 3, +20 μM Cu^{2+}-neamine; 4, +50 μM; 5, +100 μM Cu^{2+}-neamine; 6, +200 μM Cu^{2+}-neamine; 7, DNA. The upper bands are nicked, and the lower are supercoiled plasmid DNA, respectively.

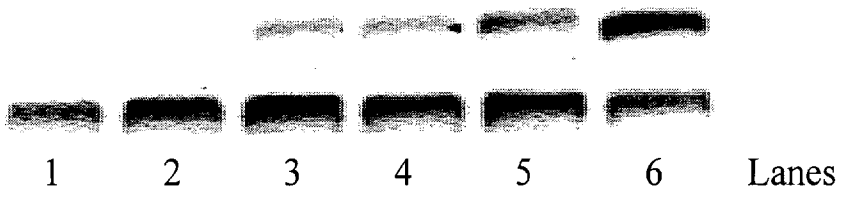

Figure S3. Cleavage of DNA (50 μM, bp) with Cu-neamine (10 μM) in 10 mM HEPES, pH 7.3, 37 °C at different intervals of time. Lanes 1, DNA; 2, + Cu^{2+}-neamine, 0 min; 3, 15 min; 30 min; 4, 60 min; 5, 90 min; 6, 120 min. The upper bands are nicked, and the lower are supercoiled plasmid DNA, respectively.

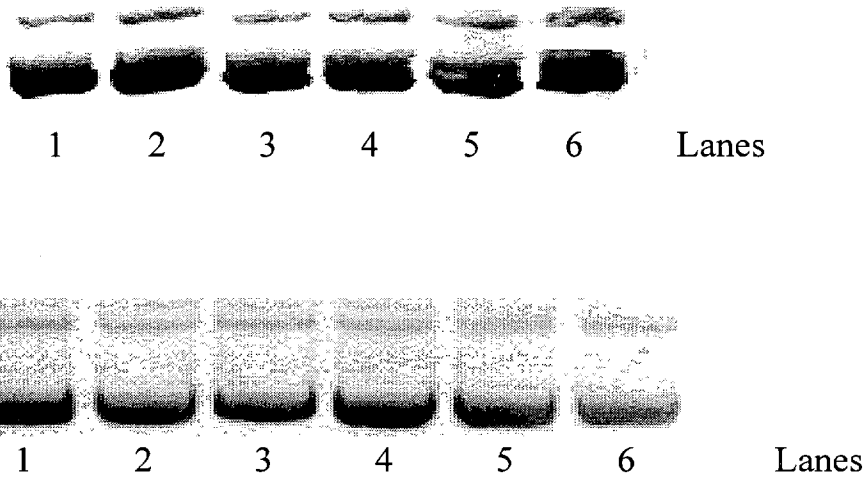

Figure S4. (upper) Interaction of plasmid pT7-7 (65 μM bp) with Cu^{2+} (50 μM) in 10 mM HEPES, pH 7.3 and incubated at 37 °C for (1) 0, (2) 15, (3) 30, (4) 60, (5) 90 and (6) 120 minutes. **(lower)** Interaction of plasmid pT7-7 (50 μM bp) with kanamycin A (50 μM) in 10 mM HEPES, pH 7.3 and incubated at 37 °C for (1) 0, (2) 15, (3) 30, (4) 60, (5) 90 and (6) 120 minutes. For each of these two simple control experiments the supercoiled plasmid (lower bands) was not purified from the nicked form (upper bands).

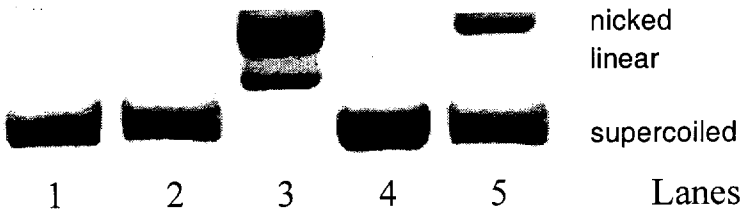

Figure S5. Effect of radical scavengers on cleavage of plasmid DNA (50 μM, bp) by Cu-(kan A). Lanes 1, DNA + Cu^{2+}-(kan A) 10 mM + ascorbic acid 10 μM + NaN_3 (10 mM); 2, DNA + Cu^{2+}-(kan A) + ascorbic acid + SOD (300 units); 3, DNA + Cu^{2+}-(kan A) + ascorbic acid; 4, DNA; 5, DNA + Cu^{2+}-(kan A) + SOD.

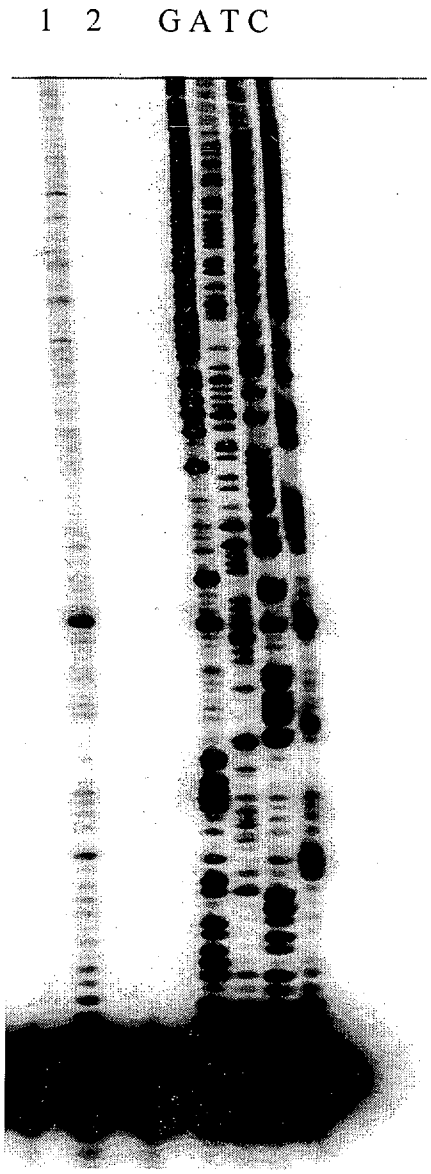

Figure S6. Autoradiograph of a DNA sequencing gel containing linear amplification products of plasmid pT7-7 treated with Cu-neamine. Lanes 1, Cu-neamine-treated pT7-7; 2, primer (18-mer); others, dideoxy sequencing lanes, G, A, T, C giving the sequences for the template strand.