

Electronic Supplementary Material

Ultrasonic and microwave assisted extraction as rapid and efficient techniques for plant mediated synthesis of quantum dots: Green synthesis, characterization of zinc telluride and comparison study of some biological activities

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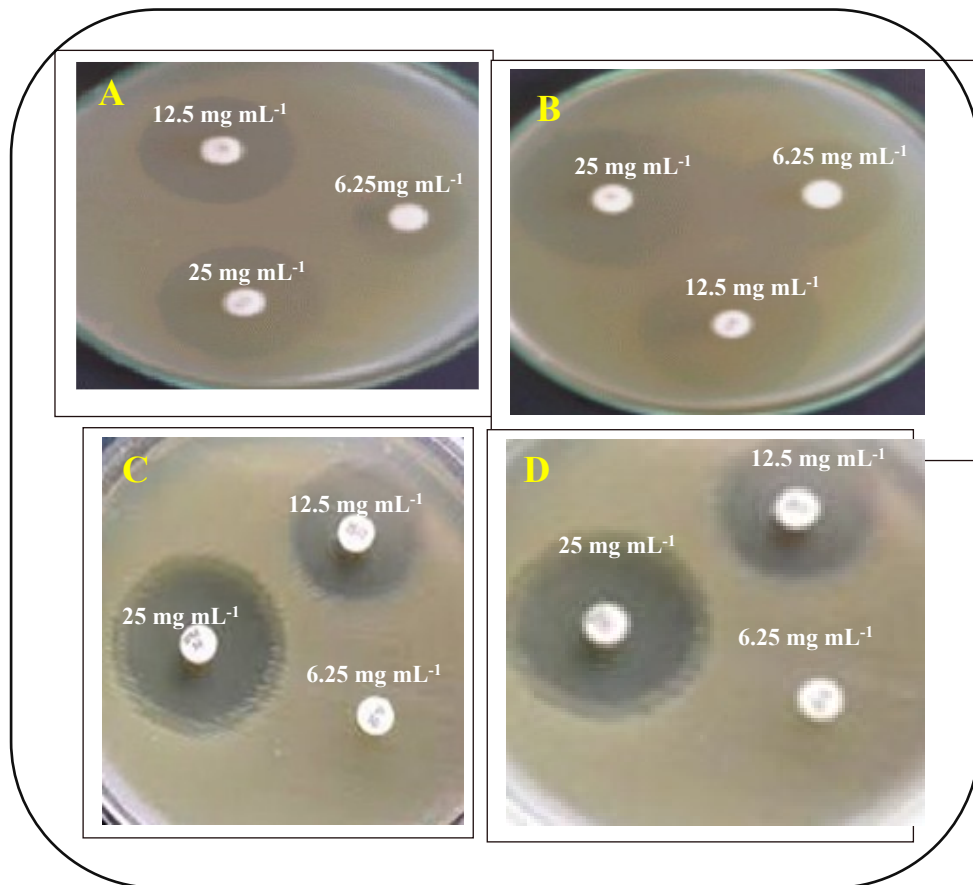


Fig. S1. Antibacterial activity of ZnTe QDs against (a) *Pseudomonas Aeruginosa* (b) *Escherichia Coli* (c) *Staphylococcus aureus* and (d) *Bacillus Subtilis*

Table S1: The antibacterial activity (inhibition zones, mm) of control antibiotics

Antibiotic	<i>Preudomonas Oeruginosa</i>	<i>Escerichia Coli</i>	<i>Staphylococcus oureus</i>	<i>Bacillus Subtilis</i>
Amoxicillin (25µg disk ⁻¹)	18.78	22.42	33.74	26.00
Kanamycin (10 µg disk ⁻¹)	19.32	15.80	15.62	20.94
Cephalexin (30 µg disk ⁻¹)	16.32	17.94	13.62	15.80

Table S2. The results of antimicrobial activity caused by samples by disk diffusion method.

Compound	Gram-negative						Gram-positive						
	<i>pseudomonas aeruginosa</i>			<i>Escherichia Coli</i>			<i>Staphylococcus aureus</i>			<i>Bacillus Subtilis</i>			
	Concentration (mg mL ⁻¹)						Concentration (mg mL ⁻¹)						
	6.25	12.5	25	6.25	12.5	25	6.25	12.5	25	6.25	12.5	25	
Aqueous extract	90 W	8.40	9.60	10.50	7.20	10.00	10.30	7.40	8.50	9.90	8.00	9.30	10.70
	270 W	9.10	10.50	11.30	7.60	10.20	11.30	8.70	9.40	10.20	8.00	9.30	10.80
	USAE	9.00	10.30	11.30	7.30	10.00	11.00	8.30	9.00	9.60	8.50	9.20	10.70
ZnTe QDs	90W	10.00	10.95	11.45	8.05	9.95	10.55	8.00	8.95	10.05	8.01	8.80	10.01
	270W	12.40	13.00	14.53	11.06	12.00	13.05	8.20	10.00	12.20	8.90	9.68	11.66
	USAE	12.60	13.30	15.00	11.06	12.09	14.08	11.07	13.01	15.01	8.01	8.01	10.00
	uncoated ZnTe	9.60	10.30	11.00	10.56	11.30	14.08	12.07	14.07	15.05	10.06	12.08	13.05

Table S3. Minimal Inhibitory Concentration (MIC) and Minimal Bactericidal Concentration (MBC) (in mg mL⁻¹) of samples against pathogenic bacteria

Compound (mg mL ⁻¹)		Gram-negative				Gram-positive			
		<i>pseudomonas aeruginosa</i>		<i>Escherichia Coli</i>		<i>Staphylococcus aureus</i>		<i>Bacillus Subtilis</i>	
		MBC	MIC	MBC	MIC	MBC	MIC	MBC	MIC
Aqueous Extract	90W	2.50	0.02	2.00	0.04	1.56	0.04	1.43	0.07
	270W	2.50	0.02	0.98	0.05	0.93	0.05	0.72	0.04
	USAE	2.90	0.00	1.01	0.05	1.56	0.03	1.00	0.05
ZnTe QDS	90W	1.50	0.03	0.65	0.08	1.00	0.06	0.98	0.78
	270W	1.50	0.03	0.00	1.00	1.58	0.03	0.06	0.73
	USAE	3.05	0.00	0.98	0.6	1.68	0.02	0.06	0.73
	Uncoated	1.40	0.04	1.00	0.05	0.72	0.04	0.98	0.05

Table S4. Cytotoxic results of samples by *Artemia uramiana* a Brime Shrimp Lethality assay.

Samples		Mortality percentage					LC ₅₀ 24h	Confidence Interval (95%)	St. Error
		At different concentration (µg mL ⁻¹)							
		100	250	500	750	1000			
Aqueous Extract	270 W	0	5	8	20	25	1346	1168-1574	117
	90 W	0	8	10	18	26	1412	1135-1688	141
	USAE	5	10	15	22	30	1439	1107-1772	170
ZnTe QDs	270 W	0	15	18	24	36	1228	1019-1437	107
	90 W	10	25	30	33	37	1310	933-1685	192
	USAE	0	21	26	28	33	1285	1006-1563	142
Control	Plant extract	6	10	19	27	38	1207	991-1423	110
	ZnTe QDs	10	15	25	35	40	1155	933-1377	113

Table S5: Mitotic index of *A. cepa* root tips exposed to different concentrations of aqueous extract of *Ficus Johannis* in comparison to EMS as positive control.

	Treatment groups	Concentration	cells	Dividing cells	MI (%)
	Tap water (as normal control)	----	1000	255 ± 26	25.5
	EMS	12 Mm	1000	55 ± 17	5.5
Aqueous Extract	90W	500 µg mL ⁻¹	1000	242 ± 22	24.2
	270W	500 µg mL ⁻¹	1000	233 ± 25	23.3
	USAE	500 µg mL ⁻¹	1000	240 ± 18	24.0
ZnTe QDs	90W	500 µg mL ⁻¹	1000	222 ± 22	22.2
	270W	500 µg mL ⁻¹	1000	229 ± 25	22.9
	USAE	500 µg mL ⁻¹	1000	224 ± 31	22.4

Ethyl methanesulfonate (EMS, (MI): Mitotic index. Data are expressed as Mean ± S.D

Table S6. The root length average of *A. cepa* of Zinc telluride solutions and *F. Johannis* in extracts at 96 hours

sample	Average Root Growth	The observed change compared to control (%)
Control	4.5±0.80	100.0
Extract; 90 W	2.87±1.00	63.1
Extract; 270 W	3.90±0.10	86.6
Extract; USAE	4.00±1.05	88.8
ZnTe; 90 W	2.00±1.08	44.4
ZnTe; 270 W	1.98±1.00	44.0
ZnTe; USAE	2.5±1.03	55.5

Table S 7: The *A. cepa* root length morphology of Zinc telluride solutions and *F. Johannisin* extracts at 96 hours

Sample	Root and morphology			The color of the end		
	Hook shape	Flower onion	Broken end	Right	Pale	Dark/Brown
Negative control	-	-	-	+	-	-
Positive control	+	+	+	-	+	+
Extract; MWAE-90 W	-	-	-	+	-	-
Extract; MWAE-270 W	-	-	-	+	-	-
Extract USAE	-	-	-	+	+	-
ZnTe; MWAE-90 W	+	+	-	+	-	-
ZnTe; MWAE-270 W	-	+	-	+	-	-
ZnTe USAE	-	+	-	+	-	-