

**Supplementary Information**

**Biosynthesis of copper, cobalt, and zinc oxide nanoparticles using seed extract of  
*Citrullus lanatus* and determination of biological potentials**

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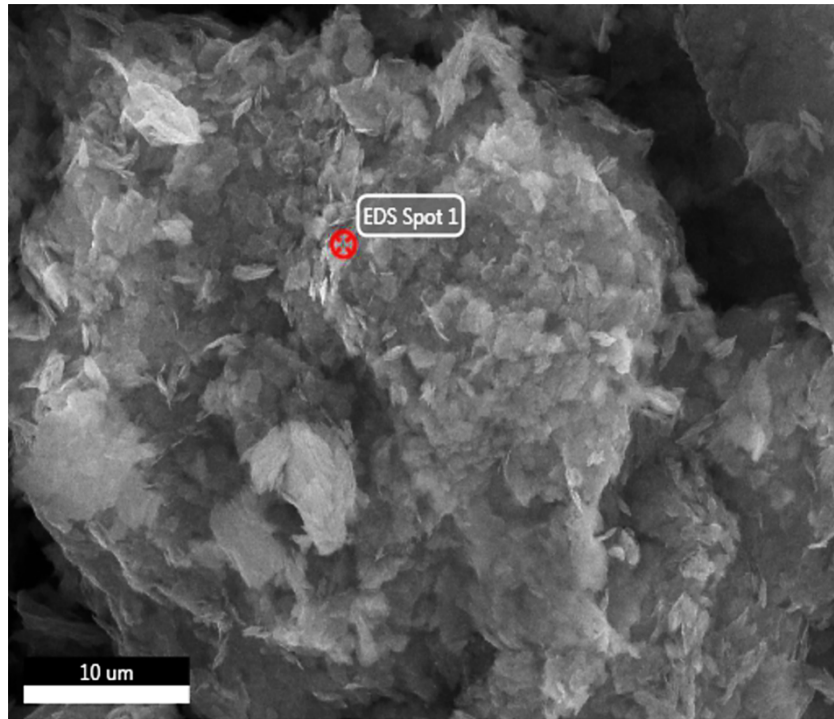
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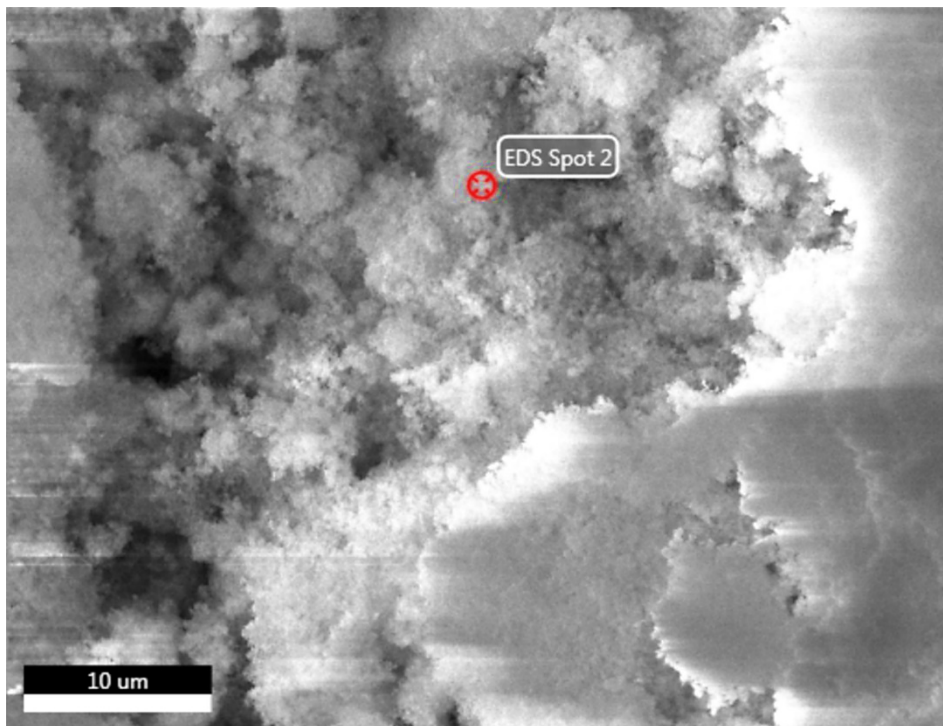
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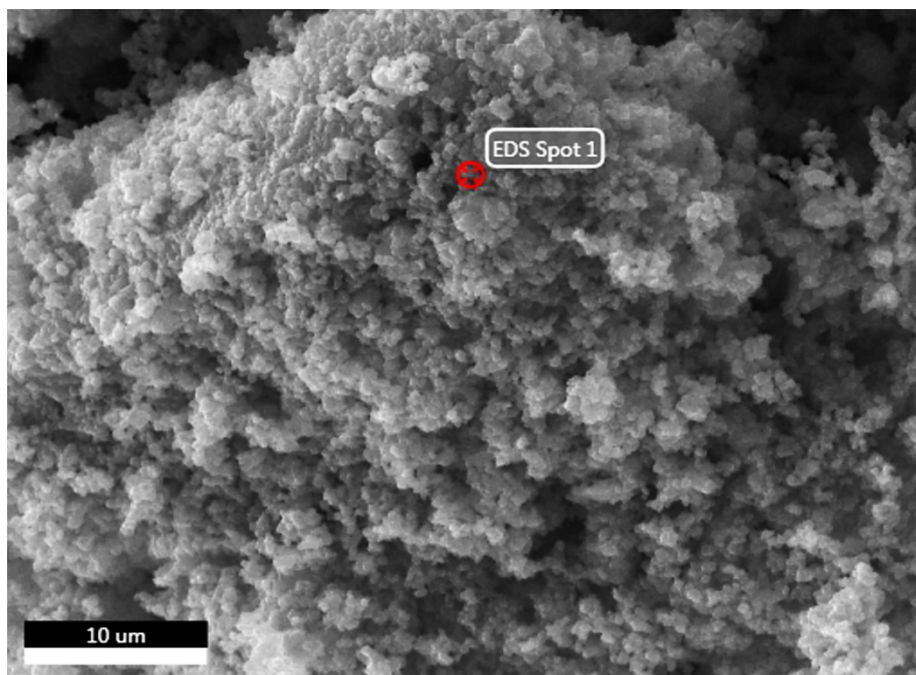




**Fig. S4.** EDS spot for cobalt oxide nanoparticles



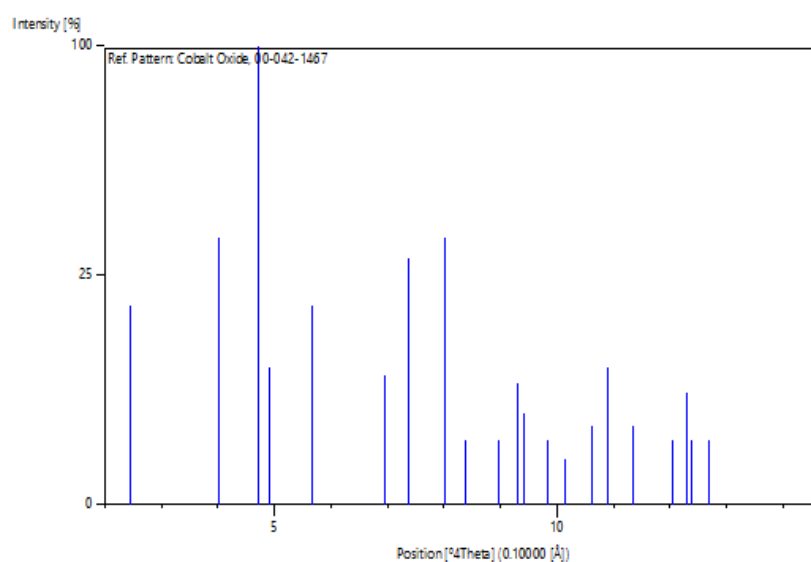
**Fig. S5.** EDS spot for copper oxide nanoparticles



**Fig. S6.** EDS spot for zinc oxide nanoparticles

**Name and formula**

Reference code:	<b>00-042-1467</b>
Compound name:	Cobalt Oxide
Empirical formula:	Co <sub>3</sub> O <sub>4</sub>
Chemical formula:	Co <sub>3</sub> O <sub>4</sub>



**Fig. S7:** Stick pattern of XRD for cobalt oxide nanoparticles



**Table S1. EDX data for the cobalt oxide nanoparticles**

Element	Weight %	Atomic %	Net Int.	Error %	K ratio	Z	R	A	F
O K	9.06	25.40	340.30	9.34	0.0427	1.2450	0.8741	0.3783	1.0000
SiK	5.75	9.17	299.99	9.49	0.0272	1.1439	0.9319	0.4113	1.0071
CaK	1.72	1.92	106.15	16.04	0.0184	1.0879	0.9766	0.8973	1.0927
CoK	83.47	63.50	2088.19	2.30	0.8226	0.9566	1.0154	0.9999	1.0304

**Table S2. EDX data for the copper oxide nanoparticles**

Element	Weight %	Atomic %	Net Int.	Error %	K ratio	Z	R	A	F
O K	2.09	7.01	52.31	15.56	0.0080	1.2793	0.8553	0.3014	1.0000
AlK	5.46	10.87	143.69	12.58	0.0153	1.1493	0.9050	0.2430	1.0036
S K	4.72	7.91	232.29	10.85	0.0308	1.1555	0.9302	0.5581	1.0127
CuK	87.73	74.20	1343.92	2.71	0.8872	0.9722	1.0103	0.9998	1.0404

**Table S3. EDX data for the zinc oxide nanoparticles**

Element	Weight %	Atomic %	Net Int.	Error %	K ratio	Z	R	A	F
O K	0.52	2.10	14.29	67.12	0.0017	1.3059	0.8351	0.2485	1.0000
ZnK	99.48	97.90	1679.17	2.77	1.0368	0.9981	1.0006	1.0001	1.0441

**Table S4. Crystallite size of CoO nanoparticles**

hkl	d-Spacing (Å)	theta	2 theta	FWHM	Crystalline size (nm)	Average size (nm)
222	2.354305438	19.1008	38.2015	0.74665	11.25982408	12.38049377
442	0.894066941	59.5058	119.01158	1.15955	13.50116346	

**Table S5. Crystallite size of CuO nanoparticles**

<b>hkl</b>	<b>d-Spacing (Å)</b>	<b>theta</b>	<b>2 theta</b>	<b>FWHM</b>	<b>Crystalline size (nm)</b>	<b>Average size (nm)</b>
	3.87782569	11.4591	22.91816	0.72296	11.21205115	10.46750092
110	2.75020331	16.2677	32.5353	0.78705	10.51472559	
-111	2.513676255	17.8474	35.69486	0.86449	9.654164184	
111	2.322349063	19.374	38.748	1.05483	7.983420159	
-202	1.868318911	24.3525	48.705	0.67217	12.97314351	

**Table S6. Crystallite size of ZnO nanoparticles**

<b>hkl</b>	<b>d-Spacing (Å)</b>	<b>theta</b>	<b>2 theta</b>	<b>FWHM</b>	<b>Crystalline size (nm)</b>	<b>Average size (nm)</b>
100	2.817544332	15.8685	31.7369	0.76326	10.82072128	11.76250657
2	2.605277469	17.2	34.39993	0.76764	10.83346578	
101	2.479032267	18.1054	36.21085	0.79147	10.56026243	
102	1.913125174	23.7466	47.49314	0.73756	11.76731372	
110	1.626771308	28.2667	56.53336	0.80689	11.17857942	
103	1.478589269	31.4019	62.8037	0.76697	12.1354489	
112	1.380914783	33.9101	67.82015	0.63639	15.04175445	

**Table S7. Antibacterial activity of synthesized nanoparticles**

<b>Metal oxide nanoparticles</b>	<b>Zone of Inhibition (mm)</b>			
	<b><i>Escherichia coli</i></b>	<b><i>Pseudomonas aeruginosa</i></b>	<b><i>Bacillus subtilis</i></b>	<b><i>Staphylococcus aureus</i></b>
Co <sub>3</sub> O <sub>4</sub>	11	9	9	–
CuO	9	11	8	15
ZnO	14	14	15	13
<i>Levofloxacin</i>	29	27	32	26

**Table S8. Antioxidant activity of synthesized nanoparticles**

<b>Inhibition (%)</b>			
<b>Metal oxide nanoparticles</b>	<b>DPPH assay</b>	<b>Total phenolic content</b>	<b>Total iron-reducing power</b>
Co <sub>3</sub> O <sub>4</sub>	71	44.69	40.67
CuO	18	49.24	25.4
ZnO	90	81.81	36.72
CL Seeds Extract	28	49	23
Gallic acid	-	94.603	-
BHT	93.75	-	85

**Table S9. Enzyme inhibition activity of synthesized nanoparticles**

<b>Enzyme Inhibition (%)</b>		
<b>Metal oxide nanoparticles</b>	<b>Protease Inhibition</b>	<b>Alpha-amylase inhibition</b>
Co <sub>3</sub> O <sub>4</sub>	42.56	61.82
CuO	70.46	26.97
ZnO	71.05	47.71
CL Seeds Extract	40	35
Acarbose	-	73
Aprotinin	78	-