Electronic supplementary information (ESI)

Bio-molecule functionalized rapid one-pot green synthesis of silver nanoparticles and their efficacy on the multidrug resistant (MDR) gut bacteria of silkworms (*Bombyx mori*)

Sudip Some[1,ϕ], Biraj Sarkar[2,ϕ], Kinkar Biswas[3], Tushar K. Jana[4], Debjoy Bhattacharjya[5], Paulami Dam[1], Rittick Mondal[1], Anoop Kumar[6], Apurba K. Deb[7], Abdul Sadat[8], Soumen Saha[5], Ahmet Kati[9], Ismail Ocsoy[10], Octavio L. Franco[11], Amitava Mandal[12,*], Sukhendu Mandal[2,*], Amit K. Mandal[1,13,*], İkbal A. İnce[14]

Table S1: Summarized elemental distribution of bio-molecule functionalized AgNPs

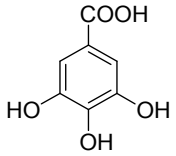
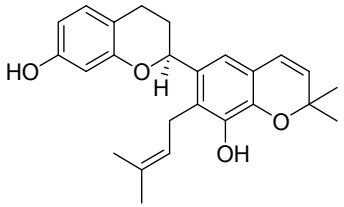
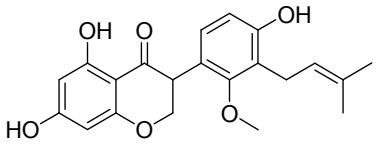
Element	Peak Area	Area Sigma	k factor	Abs Corrn.	Weight%	Weight% Sigma	Atomic%
C K	1356	76	1.706	1.000	5.63	0.31	27.62
O K	332	43	1.353	1.000	1.09	0.14	4.03
Cu K	5463	119	3.427	1.000	45.52	0.77	42.25
Ag L	9476	228	2.072	1.000	47.76	0.78	26.11
Totals					**100.00**		

Table S2: DLS and the ξ-potential of bio-molecule functionalized AgNPs

N.B: Data are expressed as mean ± SD (n = 3).

Medium	**Hydrodynamic size (d_h) (nm)**		**PDI**		**ξ-potential (mV)**	
	0 min	30 min	0 min	30 min	0 min	30 min
MH broth	25.3±1.2	25.4±1.6	0.22±0.006	0.23±0.004	-17.3±1.5	-16.8±2.5
DMEM/ F-12	50.5±2.5	53.7±3.1	0.32±0.008	0.34±0.002	-25.6±2.2	-24.2±2.6

Table S3: Spectrometric data of compounds found in aqueous leaf extract of *M. alba* L. S-1635.

Sr. No.	(m/z) Calculated	(m/z) Found	Molecular Formula	2D-Structure	Name of the Compounds	References
1	170.0215	170.8545	$C_7H_6O_5$		Gallic acid	64
2	392.1988	392.1861	$C_{25}H_{28}O_4$		Kazinol B	65
3	370.1416	370.1861	$C_{21}H_{22}O_6$		Sophoraisoflavanone A	65

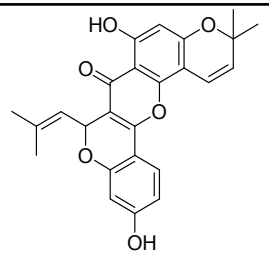
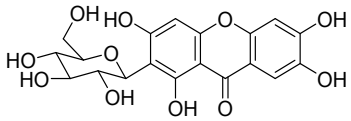
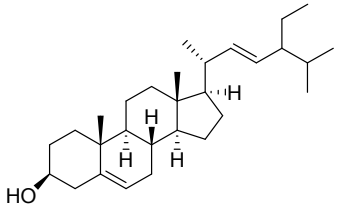
4	418.1416	418.1799	$C_{25}H_{22}O_6$		Cyclomorusin	65
5	422.0849	422.2616	$C_{19}H_{18}O_{11}$		Mangiferinxanthonoid	66
6	412.3705	412.1572	$C_{29}H_{48}O$		Stigmasterol	67

Table S4: Zone of inhibition (cm) produced by the *Enterobacter hormaechei* subsp. *hormaechei* strain ASE against standard antibiotic discs.

Sr. No	Antibiotics(Himedia)	Symbol	Concentration/Dose	Inhibition Zone	Antibiotic susceptibility
			Cell wall inhibitors		
1	Carbenicillin	CB	100 mcg/disc	no zone observed	Resistant
2	Penicillin G	P	10 units/disc	no zone observed	Resistant
3	Bacitracin	B	10 units/disc	no zone observed	Resistant
4	Cefuroxime	CXM	30 mcg/disc	1.4 cm	Sensitive
5	Aztreonam	AT	30 mcg/disc	1.5 cm	Sensitive
6	Amoxicillin+Clavulonic acid	AMC	30 mcg (20/10)/disc	#	#
7	Cefoperazone	CPZ	75 mcg/disc	1.4 cm	Sensitive
8	Vancomycin	VA	30 mcg/disc	0.8 cm	Sensitive
9	Mezlocillin	MZ	75 mcg/disc	0.1 cm	negligible sensitivity
10	Cefpodoxime	CPD	10 mcg/disc	no proper zone observed	Resistant
11	Ceftriaxone	CTR	30 mcg/disc	3.4 cm	Sensitive
12	Cefixime	CFM	5 mcg/disc	1.9 cm	Sensitive
			Outer membrane inhibitors		
13	Colistin	CL	10 mcg/disc	1.1 cm	Sensitive
14	Polymyxin B	PB	300 units/disc	1.2 cm	Sensitive
			Nucleic acid inhibitors		
15	Norfloxacin	NX	10 mcg/disc	1.0 cm	Sensitive
16	Co-trimoxazole	CoT	25 mcg/disc	3.2 cm	Sensitive
17	Levofloxacin	LE	5 mcg/disc	3.6 cm	Sensitive
18	Novobiocine	NV	30 mcg/disc	no zone observed	Resistant
19	Rifampicin	RIF	5 mcg/disc	0.7 cm	Sensitive
20	Ofloxacin	OF	5 mcg/disc	1.5 cm	Sensitive
21	Nitrofurantoin	NIT	300 mcg/disc	no proper zone observed	Resistant
			Protein synthesis inhibitors		
22	Oleandomycin	OL	15 mcg/disc	no zone observed	Resistant

23	Clindamycin	CD	2 mcg/disc	1.5 cm	Sensitive
24	Lincomycin	L	15 mcg/disc	no zone observed	Resistant
25	Tobramycin	TOB	10 mcg/disc	0.6 cm	Sensitive
26	Tetracyclin	TE	30 mcg/disc	2.8 cm - 3.0 cm	Sensitive
27	Chloramphenicol	C	30 mcg/disc	2.4 cm	Sensitive
28	Gentamicin	GEN	10 mcg/disc	2.5 cm	Sensitive
29	Streptomycin	S	10 mcg/disc	2.3 cm	Sensitive
30	Amikacin	AK	30 mcg/disc	2.5 cm	Sensitive
31	Neomycin	N	30 mcg/disc	2.2 cm	Sensitive

Note: #; Overnight growth showed tertiary growth, faint inhibition zone of 1.6 cm was observed