Figures

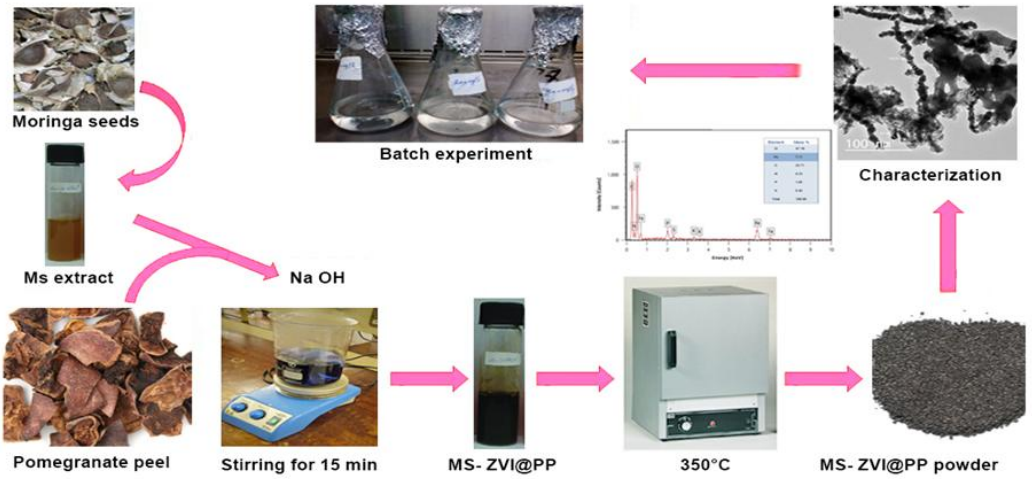


Figure 1. Schematic diagram for the Green Synthesis of nZVI using MO seed extract with incorporate pomegranate peel powder.

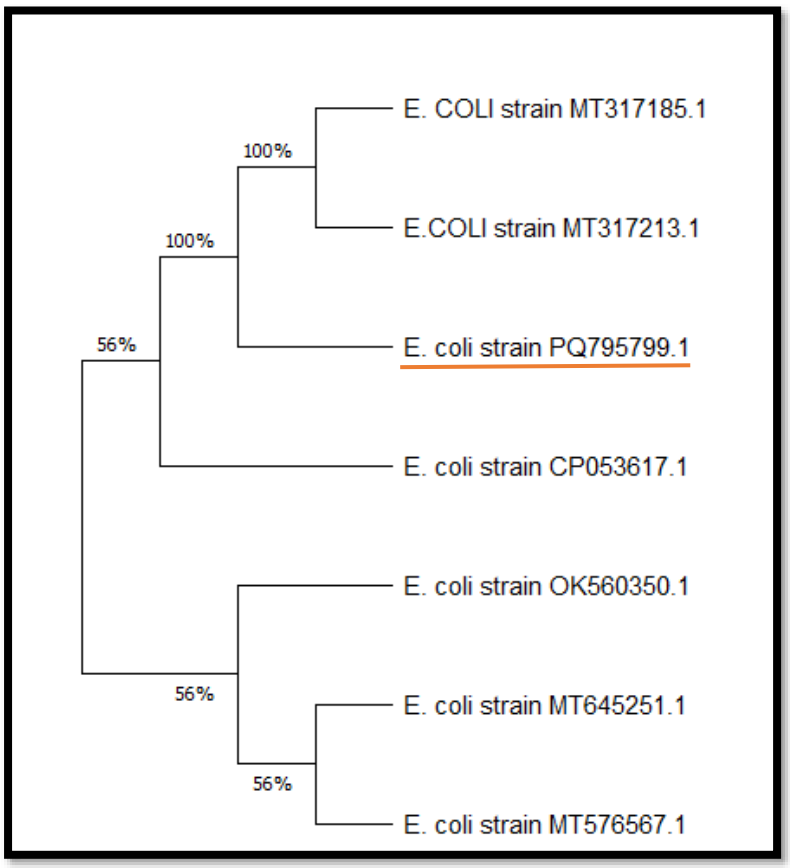
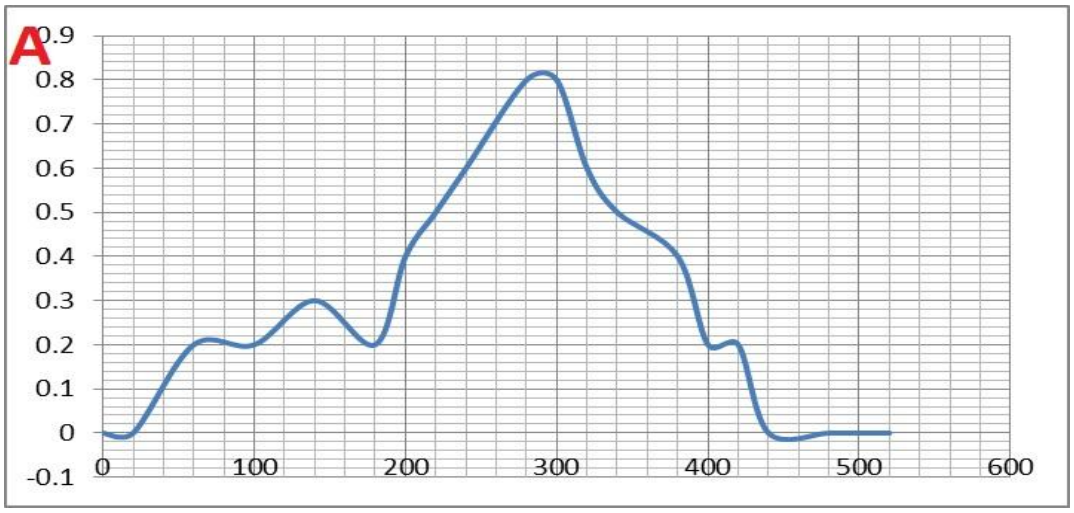
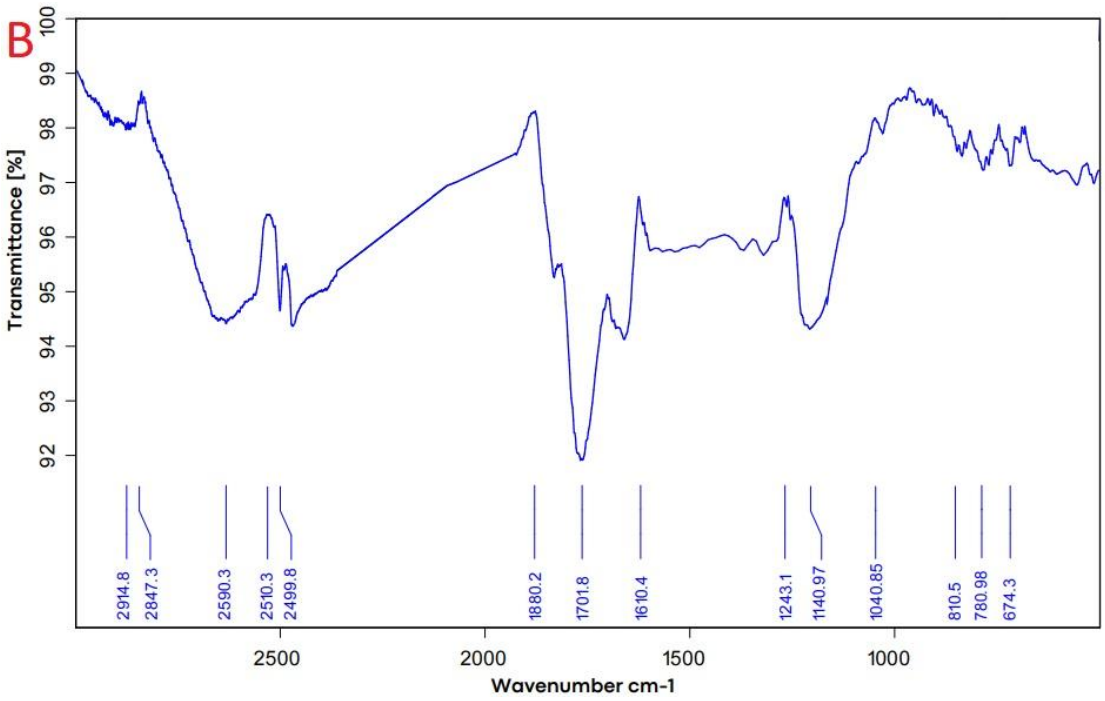


Figure 2 | Phylogenetic tree derived from *E. coli's* (PQ795799.1)16S rRNA gene sequence and other reference sequences.


A
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
0
100
200
300
400
500
600


B
Transmittance [%]
100
99
98
97
96
95
94
93
92
2914.8
2847.3
2590.3
2510.3
2499.8
1880.2
1701.8
1610.4
1243.1
1140.97
1040.85
810.5
780.98
674.3
2500
2000
1500
1000
Wavenumber cm-1

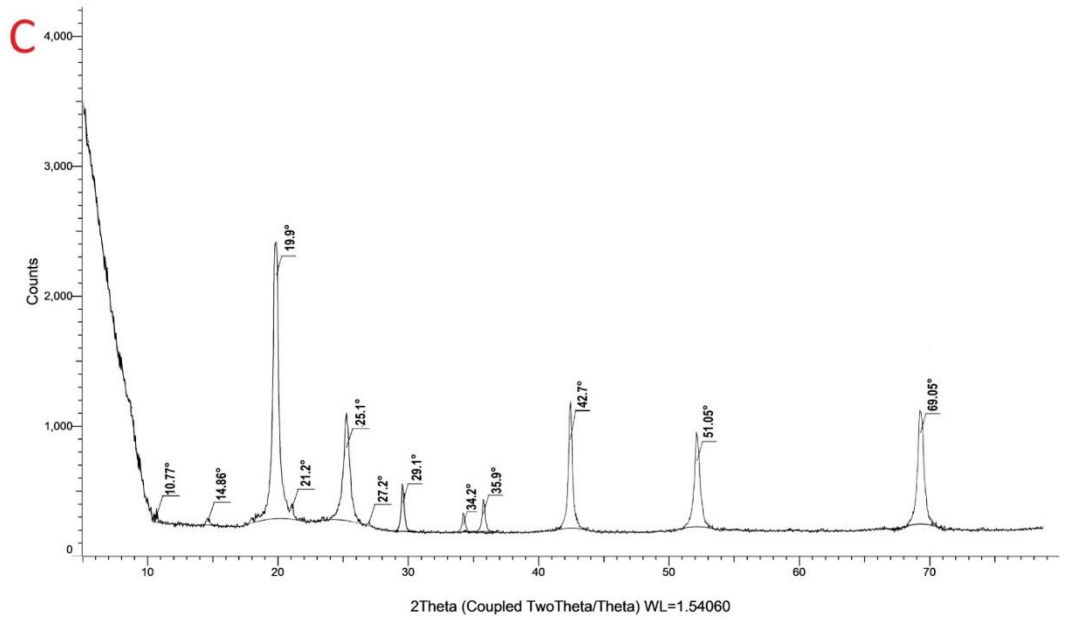
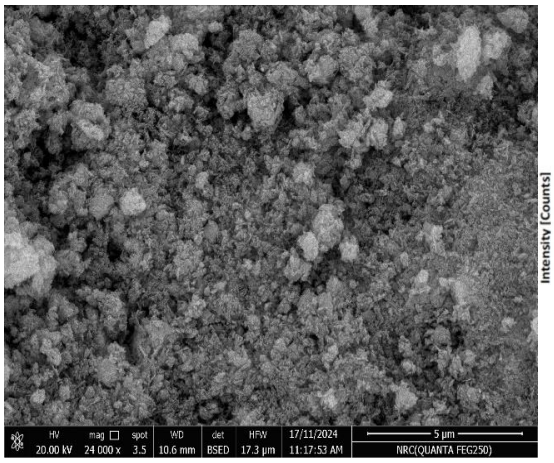
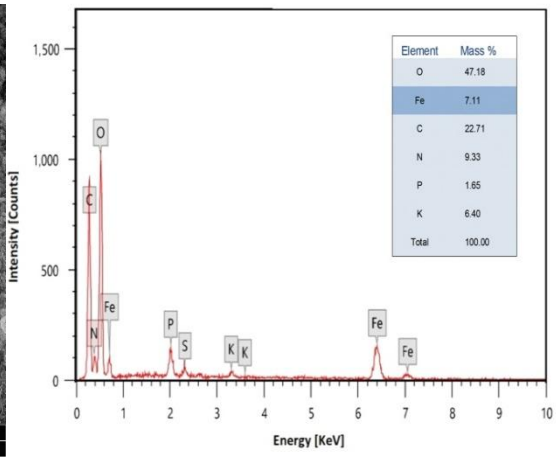
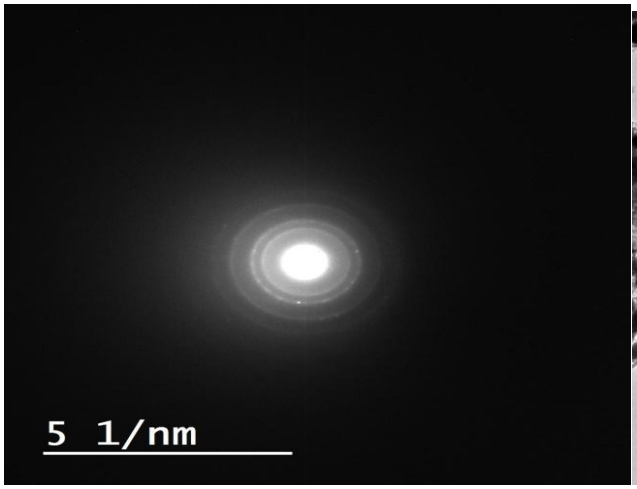


Figure. 3 Phytofabricated MS-ZVI@PP characterization a) UV-visible spectrum; b) FTIR spectra; c) MS-ZVI@PP XRD pattern.







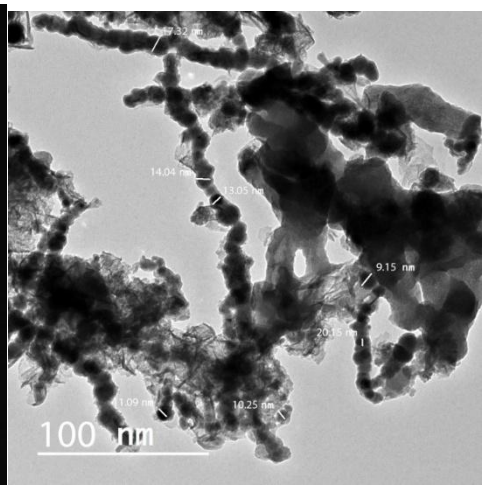


Figure. 4 Plant-based MS-ZVI@PP morphological characterization: a) SEM pictures magnified by 5 µm; b) EDX analysis; c &d) TEM images.

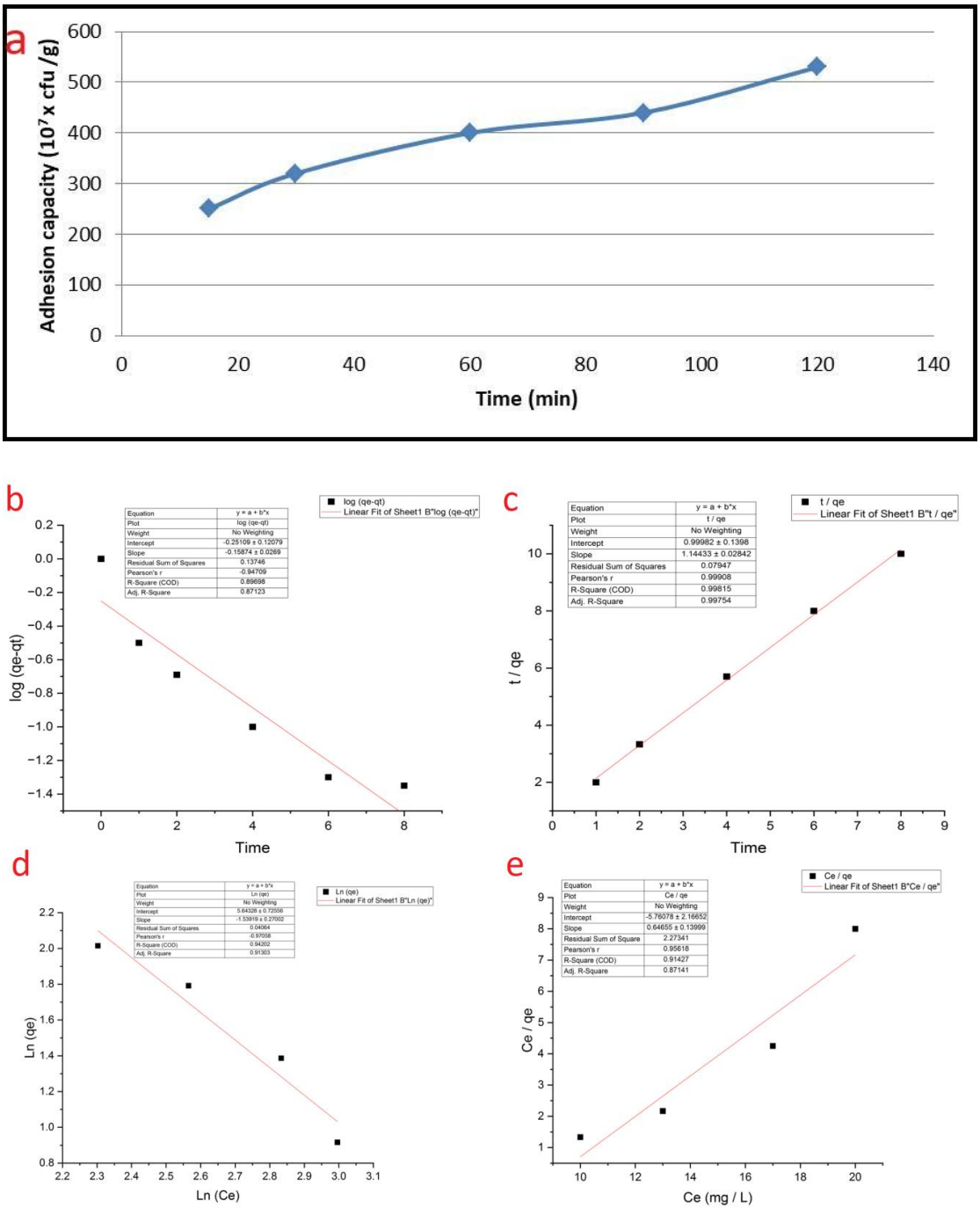
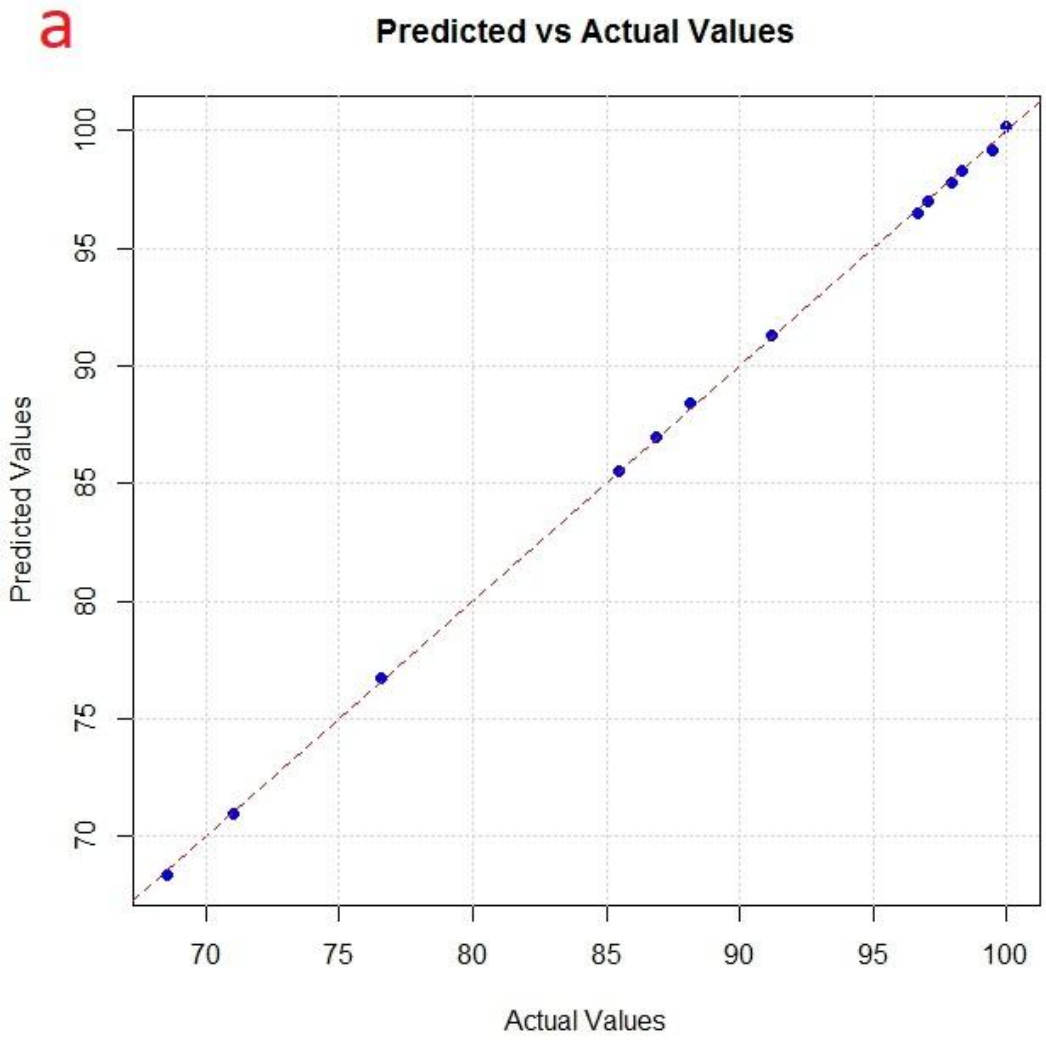


Figure. 5 Plots of kinetic and isothermal models that describe the adherence of *E. coli*-PQ795799.1 onto MS-ZVI@PP. Adhesion capacity (a); Freundlich isotherm Langmuir isotherm; pseudo-first-order model (b); pseudo-second-order model (c); and Langmuir isotherm (e).

a


Predicted vs Actual Values
Predicted Values
Actual Values
70
75
80
85
90
95
100

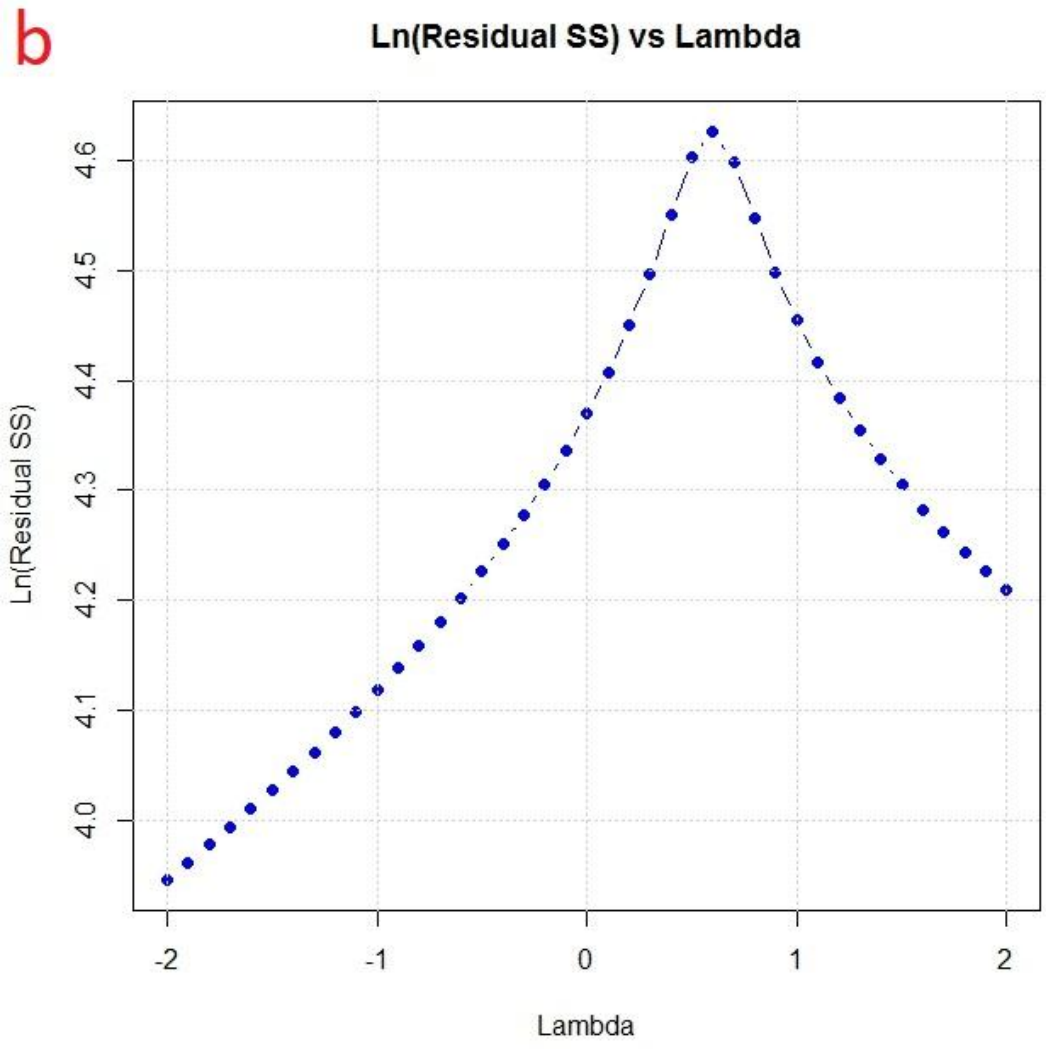
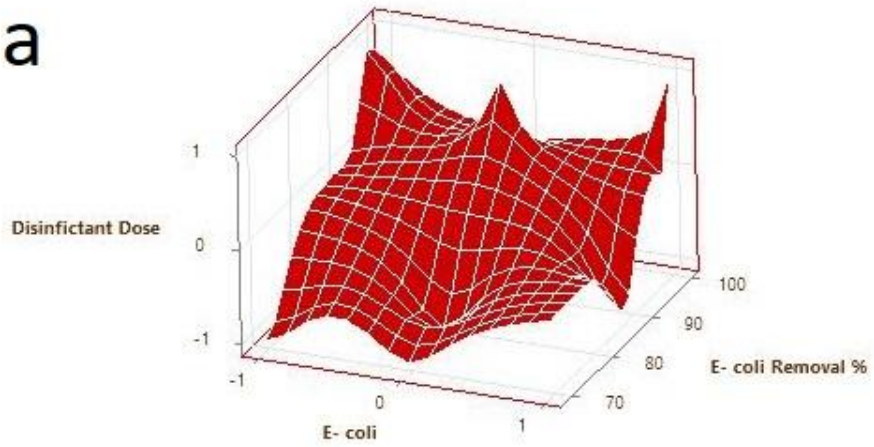


Figure. 6 Plot of expected versus real values of *E. coli* elimination by Ms-nZVI@pp (a) and (b) Box–Cox plot of model transformation



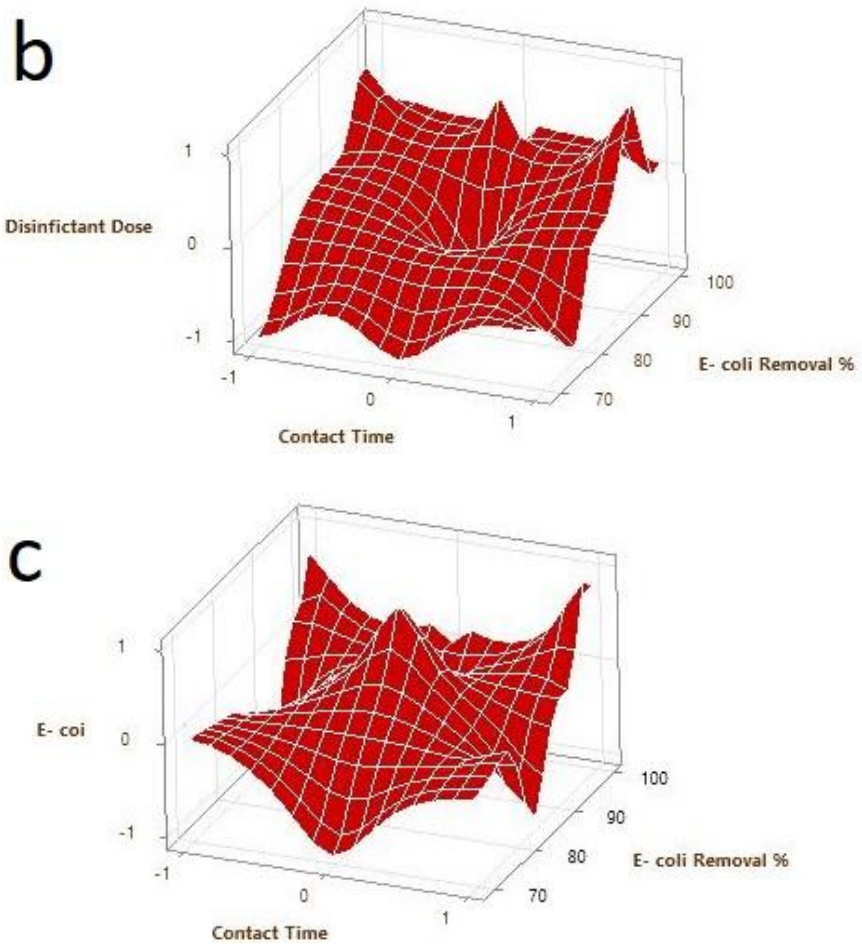


Figure. 7 Response surface plots showing *E. coli*- PQ795799.1 removal efficiency (%) vs. (a) contact time and disinfectant dose, (b) *E. coli* concentration and disinfectant dose, and (c) contact time and *E. coli* concentration

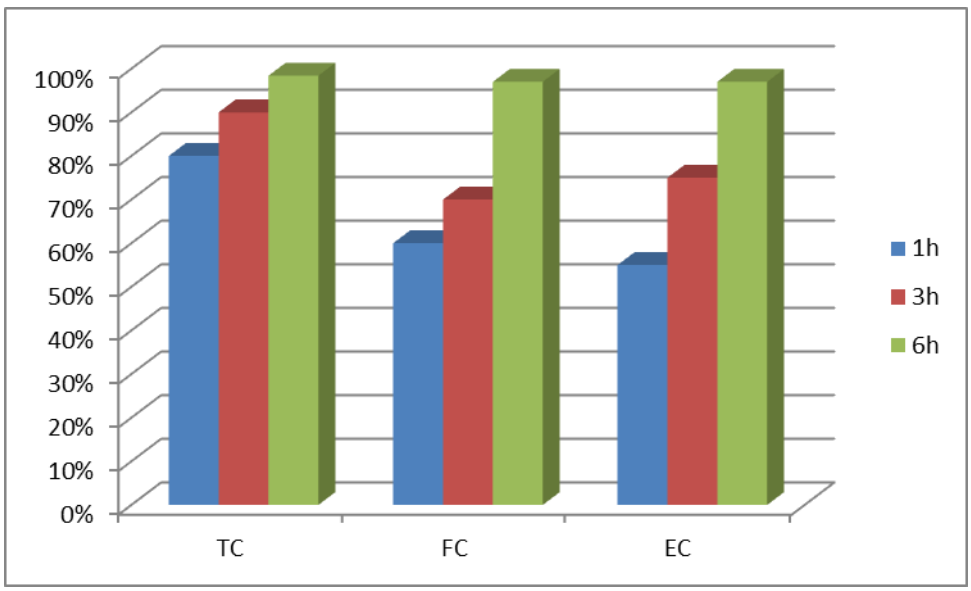


Figure. 8 Bacteria removal efficiency concerning contact time of immobilized phytofabricated MS-ZVI@PP. The mean ± SE of three duplicate tests is used to express the data, and columns with different letters denote significant differences at p.

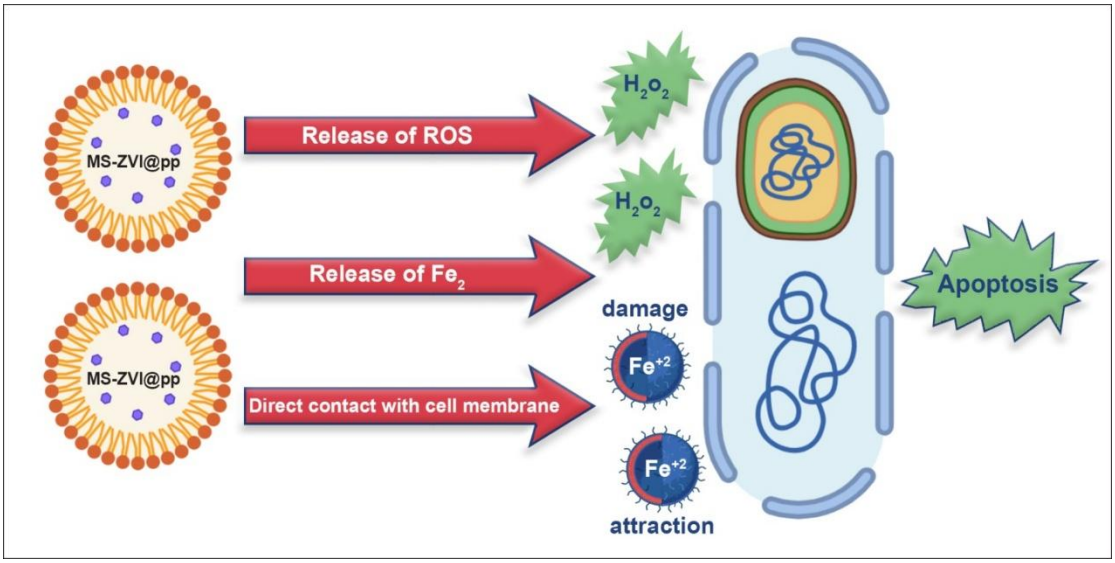


Figure 9 Disinfection mechanism of phytofabricated MS-ZVI@PP