Supplementary data

Green synthesis *of silver nanoparticles using Rumex. crispus* seeds and synergistic application of photodynamic/photothermal antimicrobial therapy

Atiyeh Nomani[1], Mohammad Reza Aghdaee[2], Naser Faraji[3*], Siamak Javani[4*]

[1] School of Advanced Technologies in Medicine, Golestan University of Medical Sciences, Iran

[2]Institute for Advanced Studies in Basic Sciences (IASBS)Zanjan, Iran

[3]School of Advanced Technologies in Medicine, Golestan University of Medical Sciences, Iran

[4] Medical Cellular and Molecular Research Center, Golestan University of Medical Sciences, Iran

* Correspondence: [1]Siamak Javani, Medical Cellular and Molecular Research Center, Golestan University of Medical Sciences, Iran; Email siamak.javani@imdea.org,

* Naser Faraji, School of Advanced Technologies in Medicine, Golestan University of Medical Sciences, Iran: Email naser_faraji87@yahoo.com.

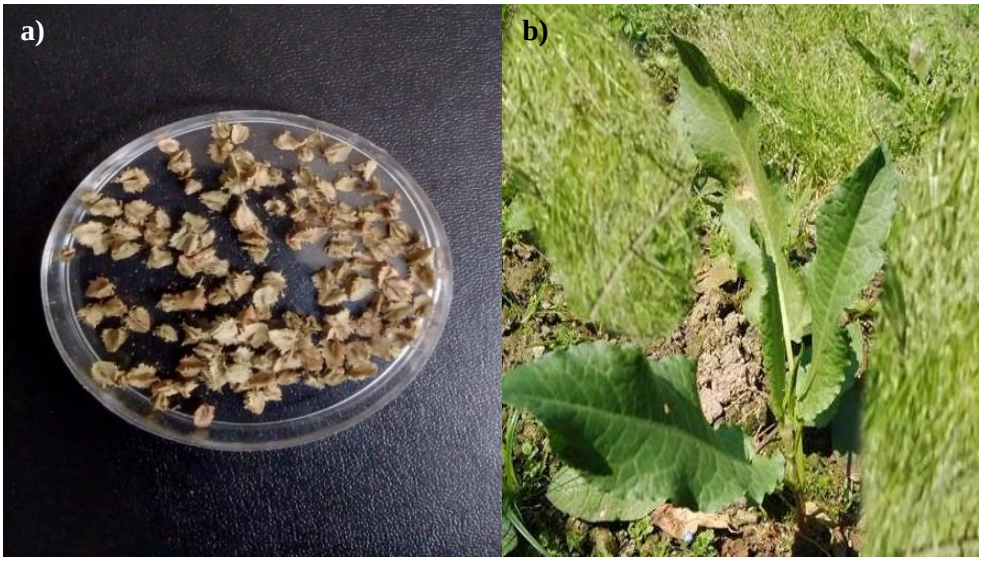

Fig. S1. (a) *R. crispus* seeds; (b) *R. crispus* plant

Fig. S2. Light source (diod laser) for PDT

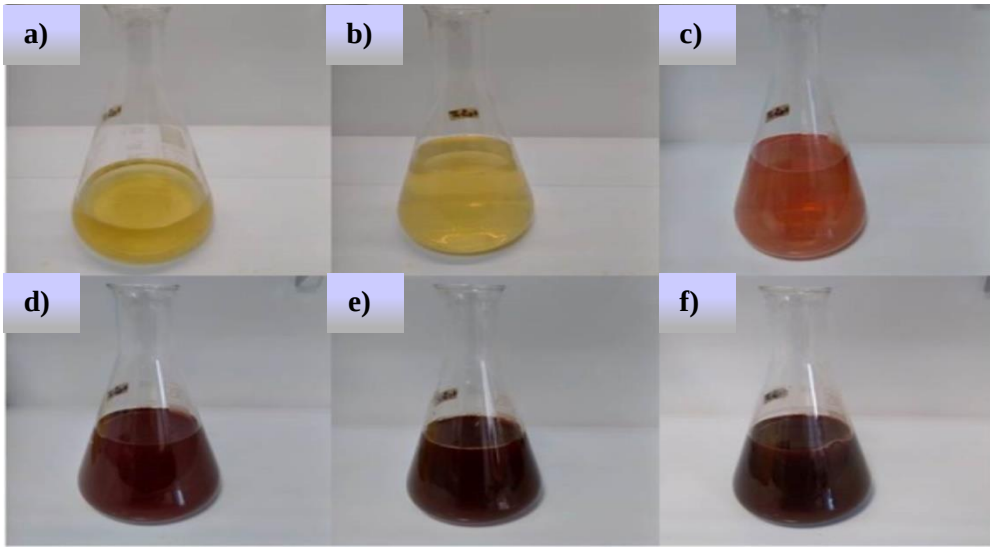

Fig. S3. Images of RC-AgNPs formations: (a) *R. crispus* seeds extract; (b) immediately after the addition of $AgNO_3$; (c) after an hour; (d) after 6 hours; (e) 1 day after biosynthesis; (f) after 2 days**.**

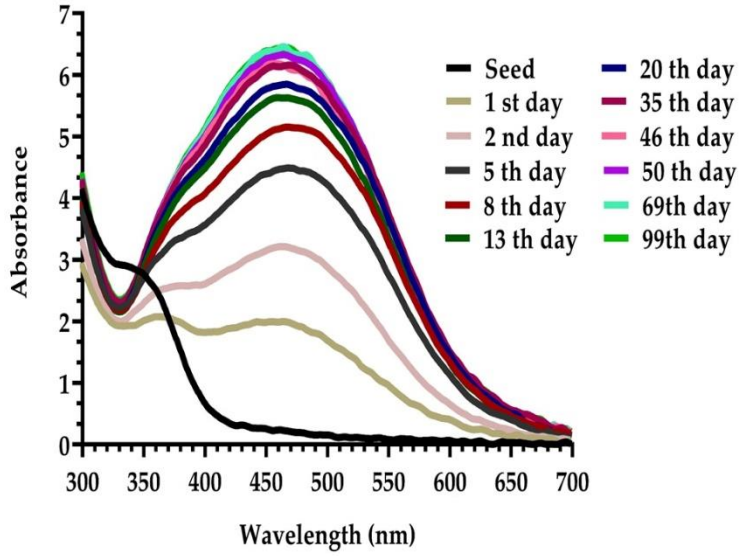

Fig. S4. UV-visible spectroscopy of RC-AgNPs and stability studies for 99 days with different time intervals**.**

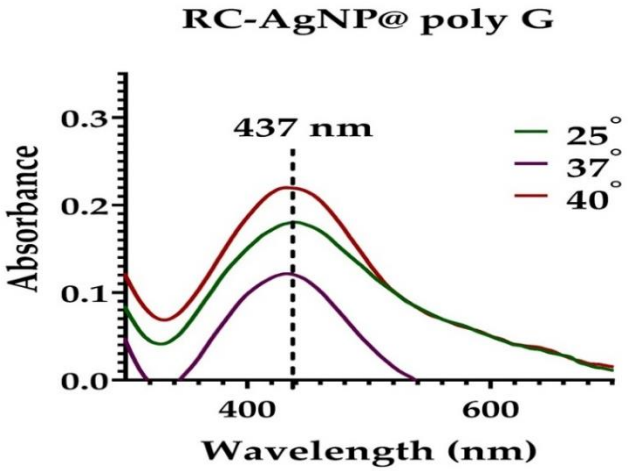

Fig. S5. UV-visible spectroscopy of RC-AgNP @ poly-G at temperatures of 25°, 37°and 40°C.

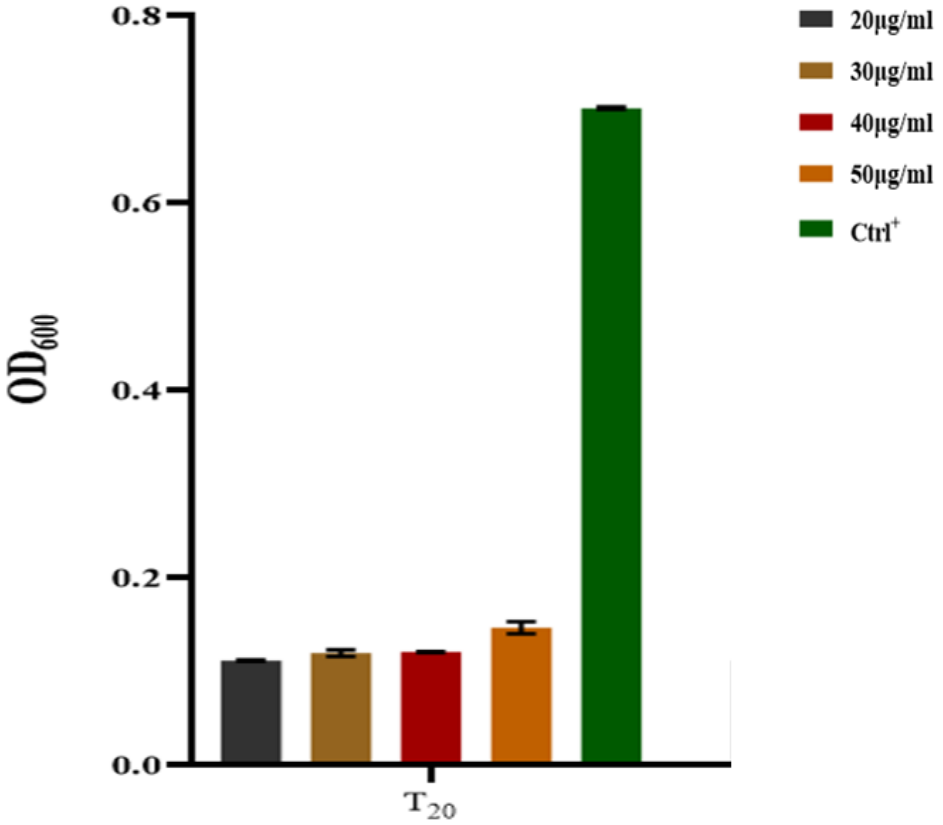

Fig. S6. It should be noted that bacteria not treated with RC-AgNPs grew well at 40°C, and increasing the temperature had no effect on their growth, while an aPTT effect was observed in bacteria treated with RC-AgNPs. This figure shows the aPTT effect against *E. coli* bacteria treated with RC-AgNP at concentrations of 20, 30, 40, and 50 µg/ml and incubated at 40°C. The $ctrl^+$ sample shows bacteria not treated with RC-AgNP incubated at 40°C. The $ctrl^+$ sample at 40°C has an OD_{600} higher than 0.6 at T_{20}. This indicates that increasing the temperature from 37°C to 40°C does not affect bacterial growth. Therefore, the observed decrease in bacterial growth treated at 40°C can be attributed to the added nanoparticles

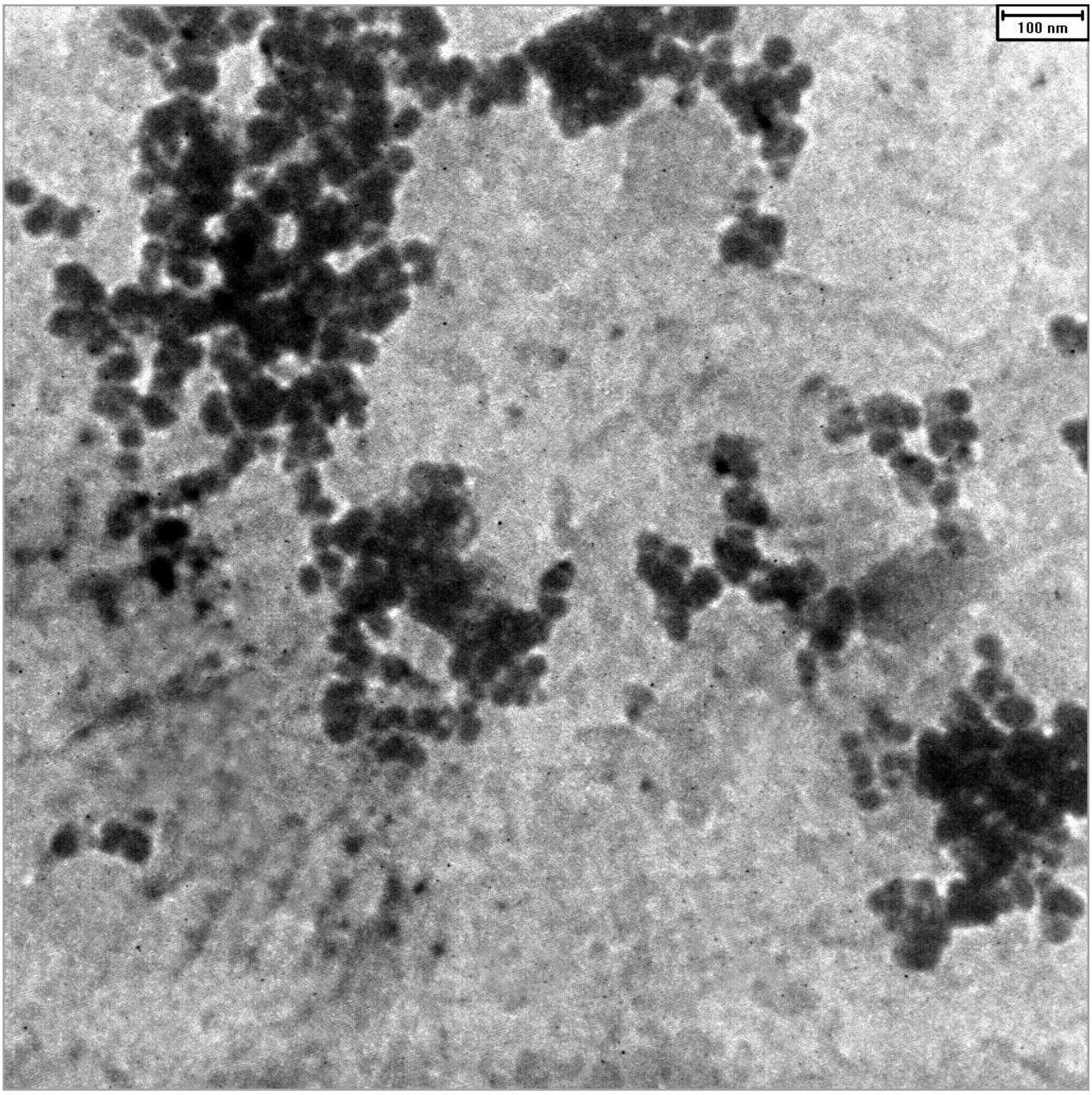

Fig. S7. TEM images of RC-AgNPs at the scale of 100 nm

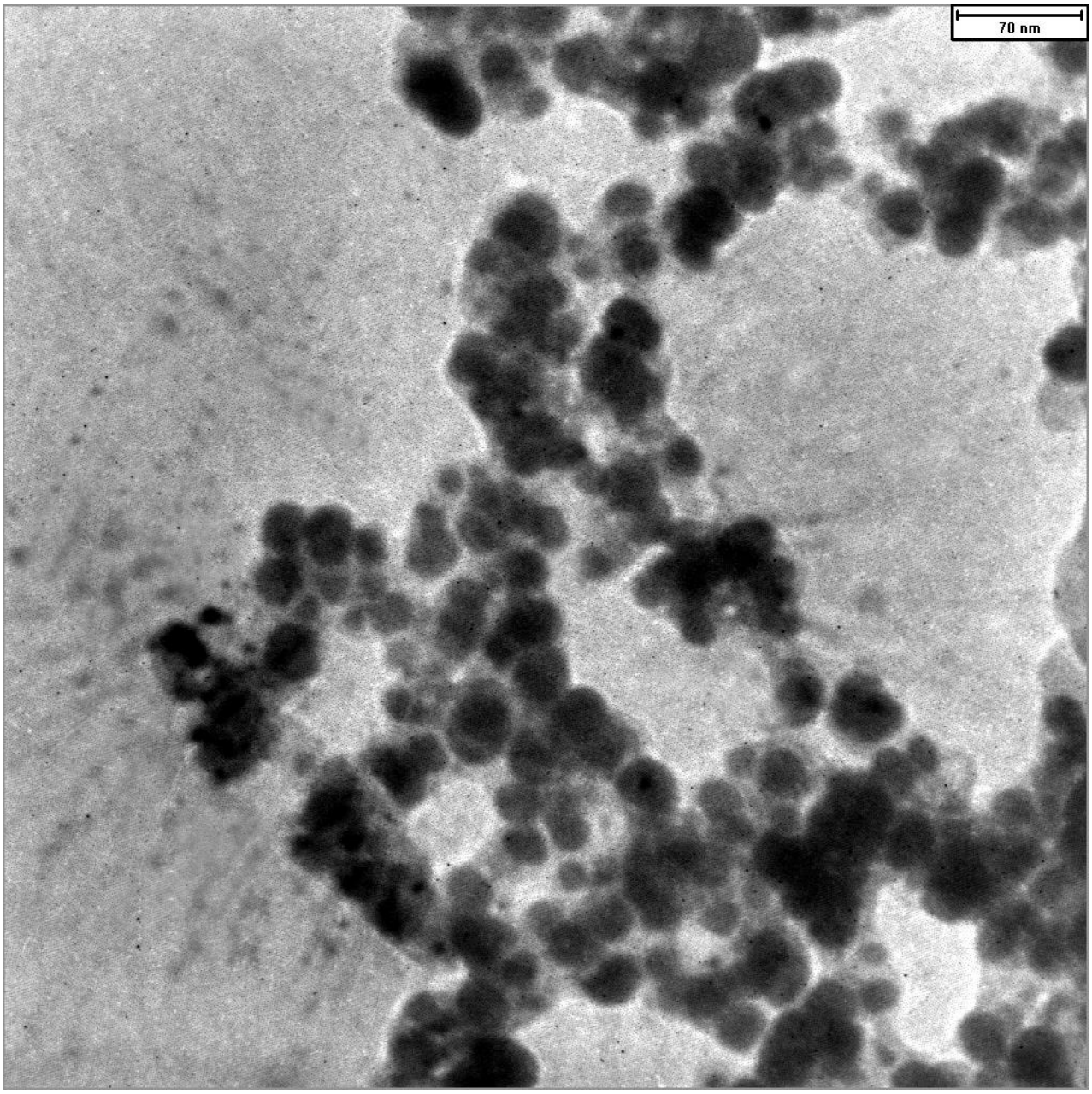

Fig. S8. TEM images of RC-AgNPs at the scale of 100 nm

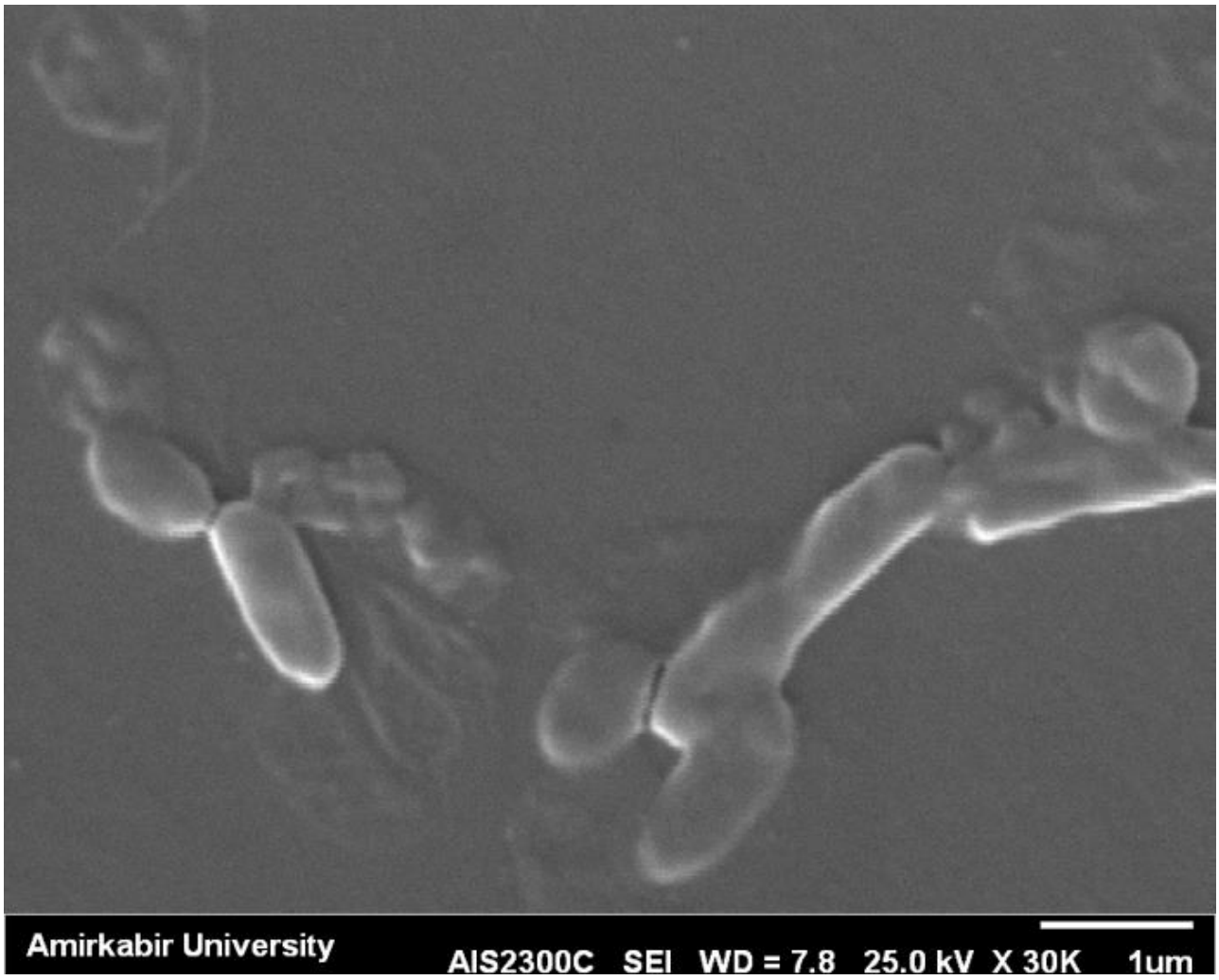

Fig. S9. SEM images of *P. aeruginosa* bacteria untreated with RC-AgNPs

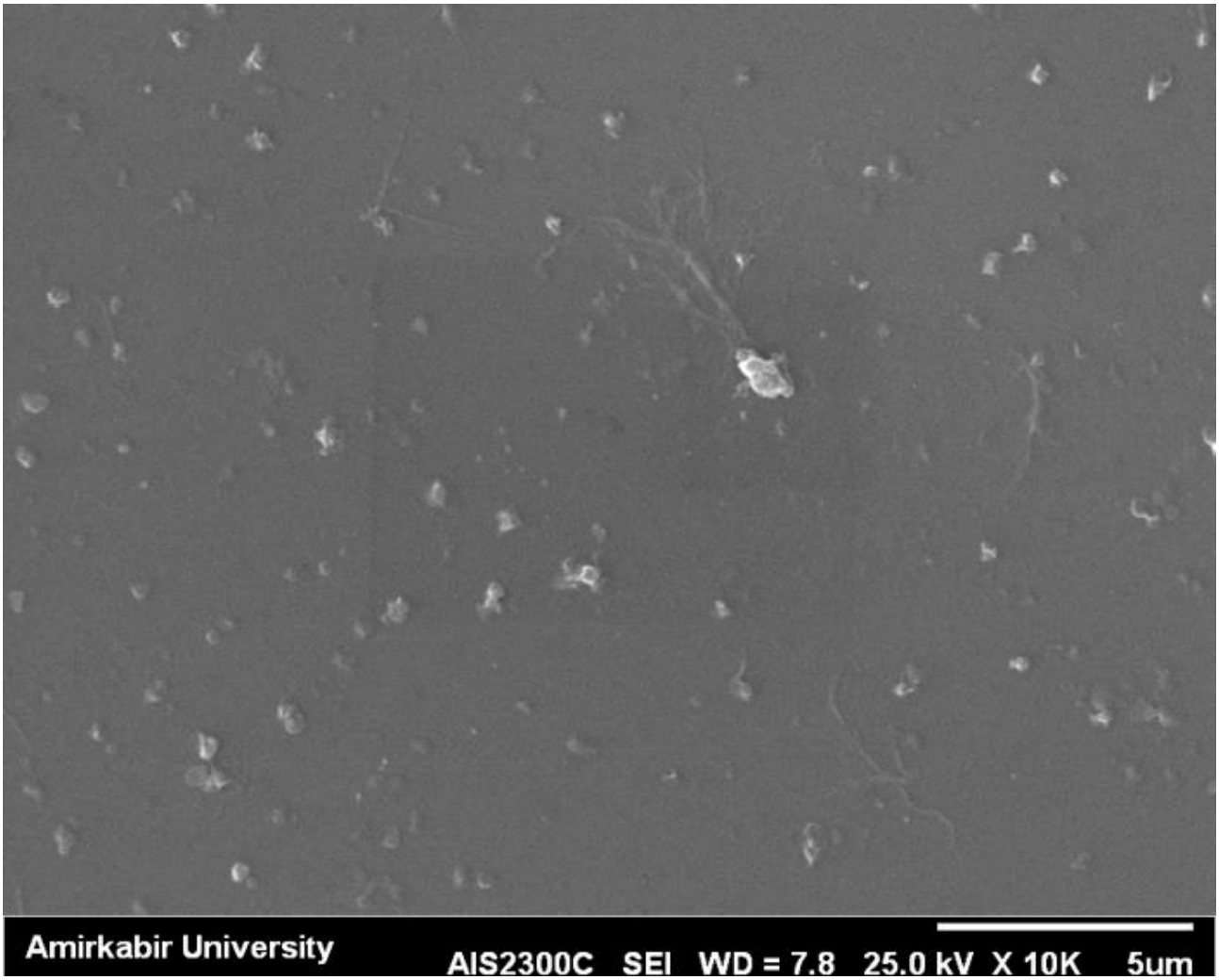

Fig. S10. SEM images of *P. aeruginosa* bacteria treated with RC-AgNPs