

Supporting information

β -sitosterol-D-glucopyranoside isolated from *Desmostachya bipinnata*

mediate photoinduced rapid green synthesis of silver nanoparticles

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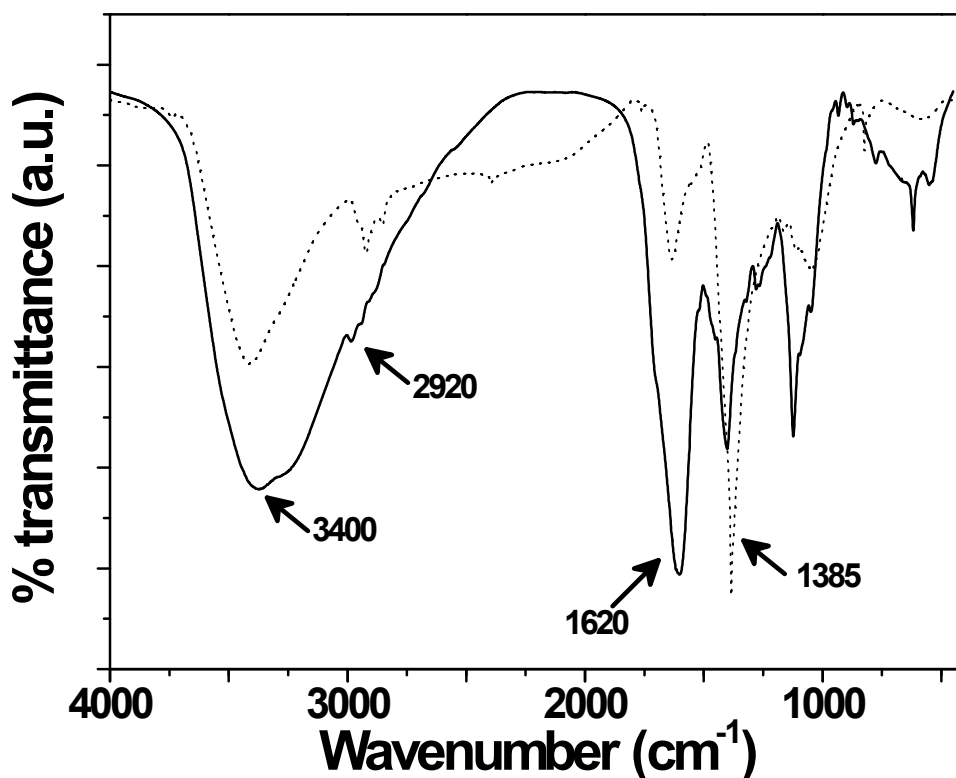


Fig. S1: FTIR spectra of *D. bipinnata* aqueous extract (solid line) and *D. bipinnata* stabilized AgNPs (dotted line). The broad band at 3400 and 2920 cm⁻¹ are attributed to –O-H and C-H stretching of the phytoconstituents. The band at 1385 cm⁻¹ can be attributed to aliphatic –CH₂ and –CH₃ groups or bending modes of O-H bonds. IR peaks corresponds to C-O stretching were observed at 1620 cm⁻¹. As inferred from the FTIR data, all the bands are observed in both *D. bipinnata* aqueous extract and *D. bipinnata* stabilized AgNPs, indicating the presence of phytoconstituents around the nanoparticles.

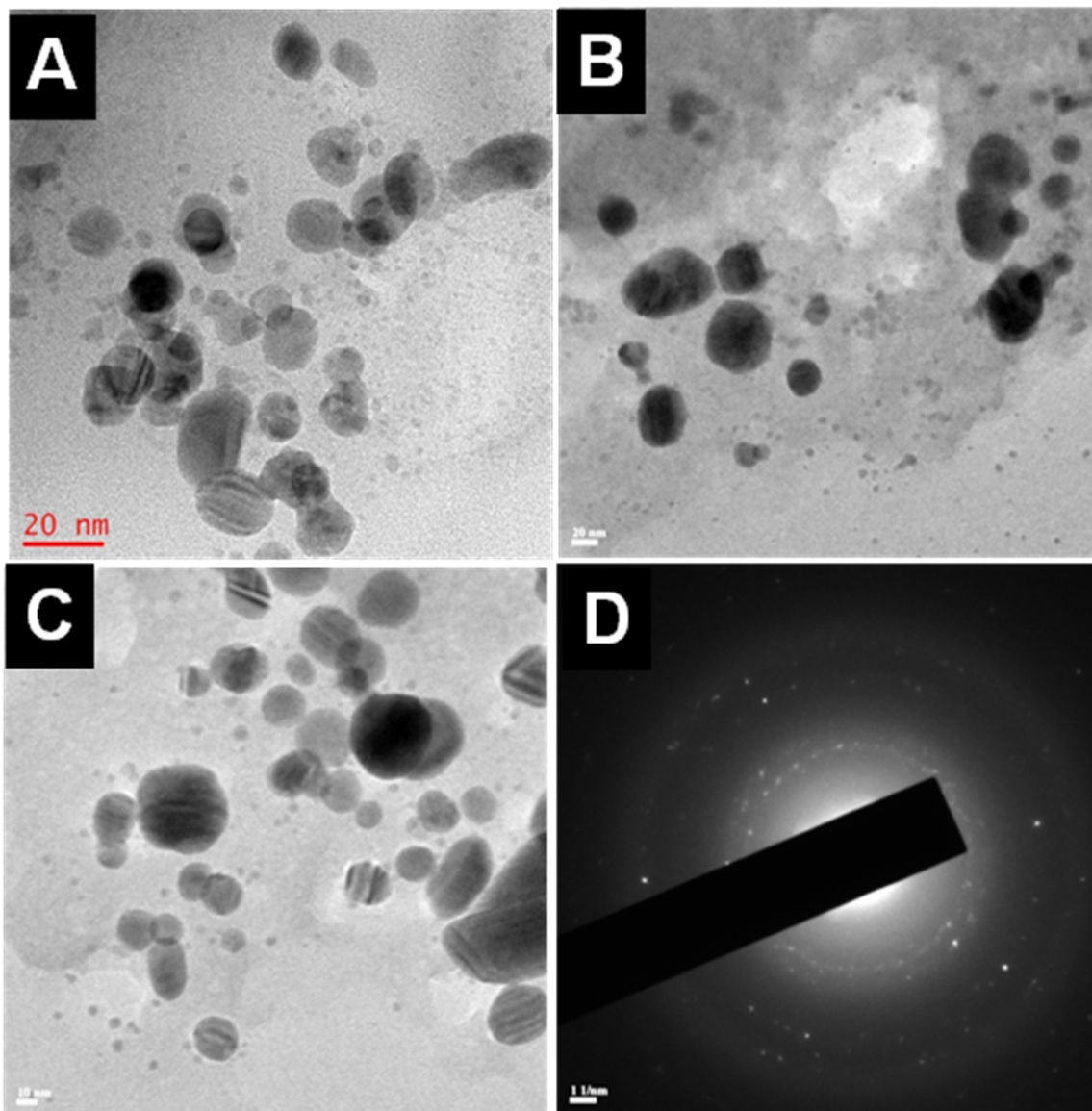


Fig. S2: TEM images of AgNPs prepared using β sitosterol glucoside mediated by (A) sunlight, (B) room light, (C) UV light and (D) SAED pattern.

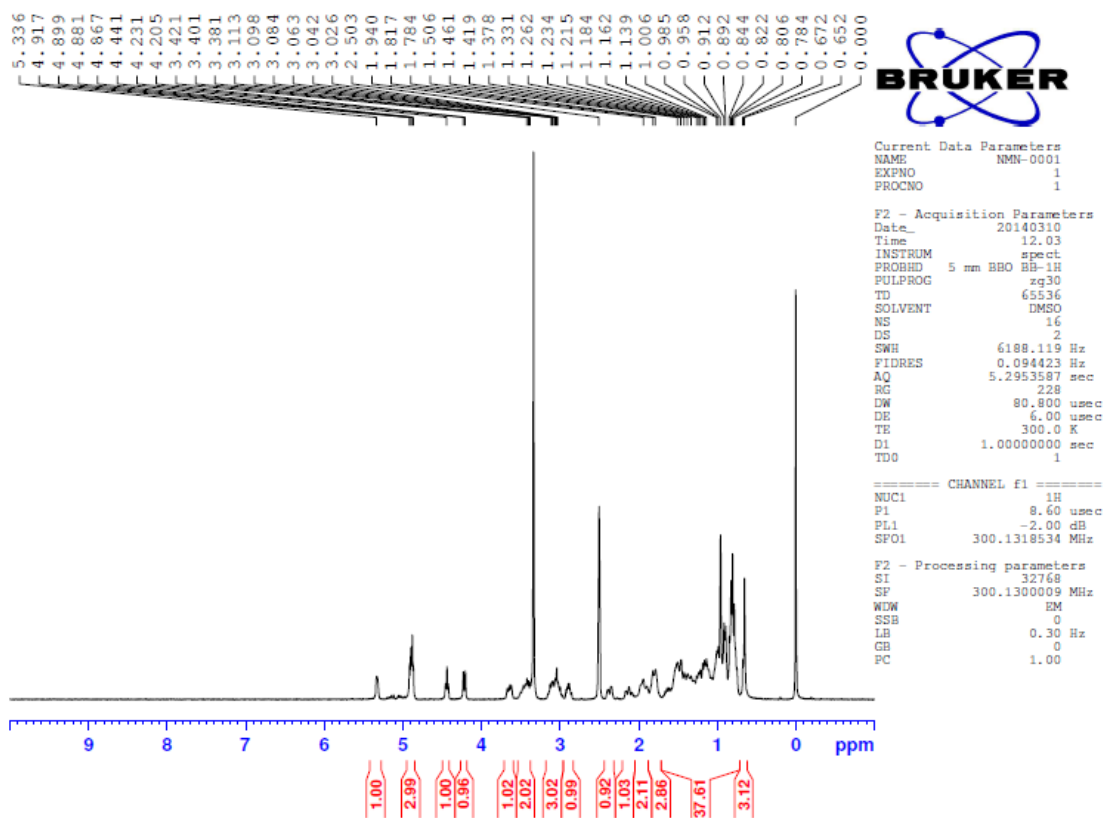


Fig. S3: ^1H NMR of BS isolated from *D. bipinnata*

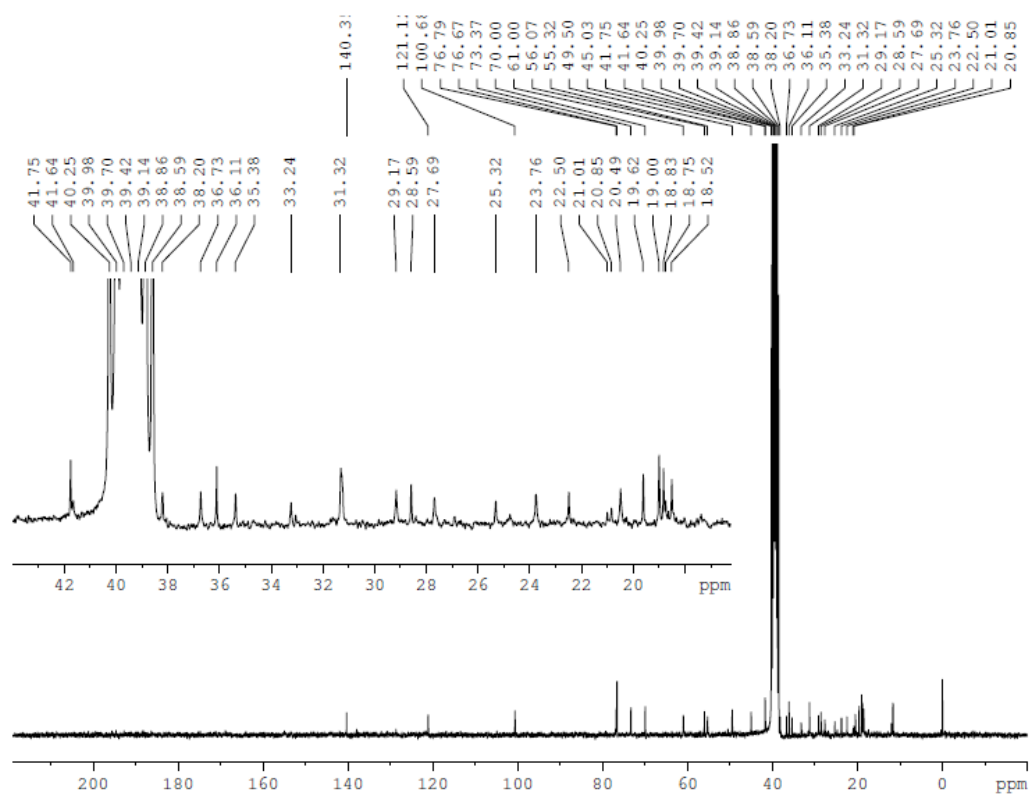


Fig. S4: ^{13}C NMR of BS isolated from *D. bipinnata*

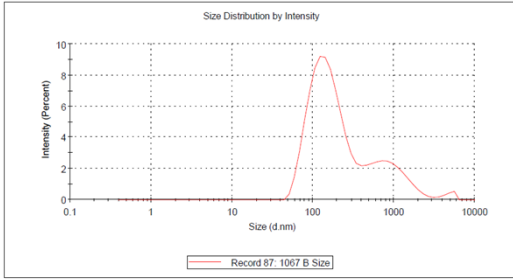
(A) File Name: 10_2014.dts Dispersant Name: Water
 Record Number: 87 Dispersant RI: 1.330
 Material RI: 1.73 Viscosity (cP): 0.8872
 Material Absorption: 0.010 Measurement Date and Time: Friday, October 17, 2014 10:3...

System
 Temperature (°C): 25.1 Duration Used (s): 60
 Count Rate (kcps): 324.2 Measurement Position (mm): 5.50
 Cell Description: Clear disposable zeta cell Attenuator: 5

Results

	Size (d.nm):	% Intensity:	St Dev (d.n...)
Z-Average (d.nm): 183.3	Peak 1: 159.8	74.7	78.51
Pdl: 0.337	Peak 2: 925.2	23.7	504.7
Intercept: 0.944	Peak 3: 4618	1.6	842.0

Result quality: Good



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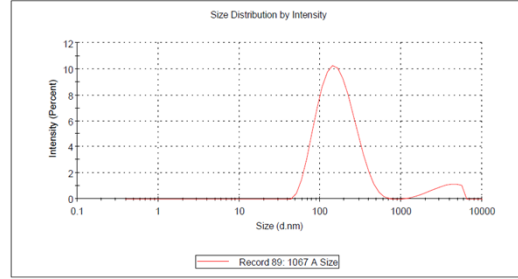
(B) File Name: 10_2014.dts Dispersant Name: Water
 Record Number: 89 Dispersant RI: 1.330
 Material RI: 1.73 Viscosity (cP): 0.8872
 Material Absorption: 0.010 Measurement Date and Time: Friday, October 17, 2014 10:3...

System
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 Count Rate (kcps): 363.9 Measurement Position (mm): 5.50
 Cell Description: Clear disposable zeta cell Attenuator: 5

Results

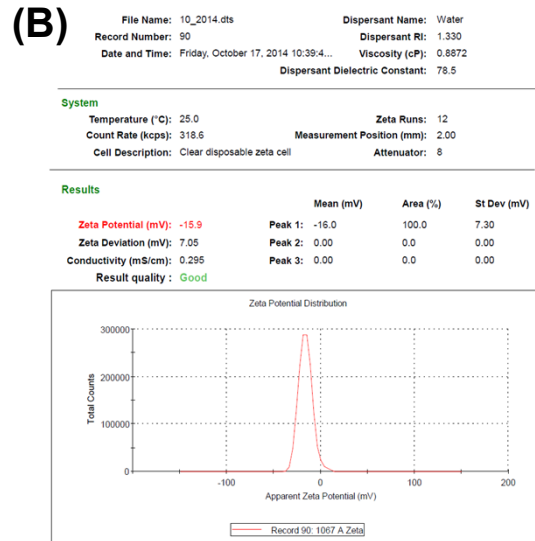
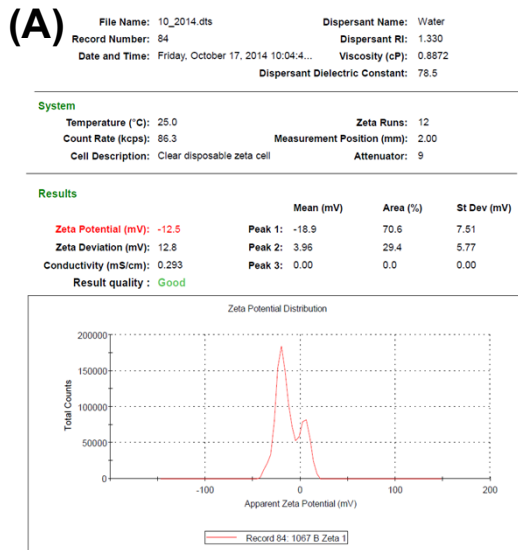
	Size (d.nm):	% Intensity:	St Dev (d.n...)
Z-Average (d.nm): 149.2	Peak 1: 176.0	91.9	92.02
Pdl: 0.325	Peak 2: 3563	8.1	1242
Intercept: 0.871	Peak 3: 0.000	0.0	0.000

Result quality: Good



Zetasizer 1v1r 7.10
 Serial Number: MAL1054413

Fig. S5: Particle size analysis. (A) *D. bipinnata* stabilized AgNPs and (B) β -sitosterol stabilized AgNPs



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 Serial Number: MAL1054413

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 Date and Time: Friday, October 17, 2014 10:39:4...

ZetaScan Ver: 7.10
 Serial Number: MAL1054413

File Name: 10_2014.dts
 Record Number: 90
 Date and Time: Friday, October 17, 2014 10:39:4...

Fig. S6: Zeta potential of (A) *D. bipinnata* stabilized AgNPs and (B) β -sitosterol stabilized AgNPs

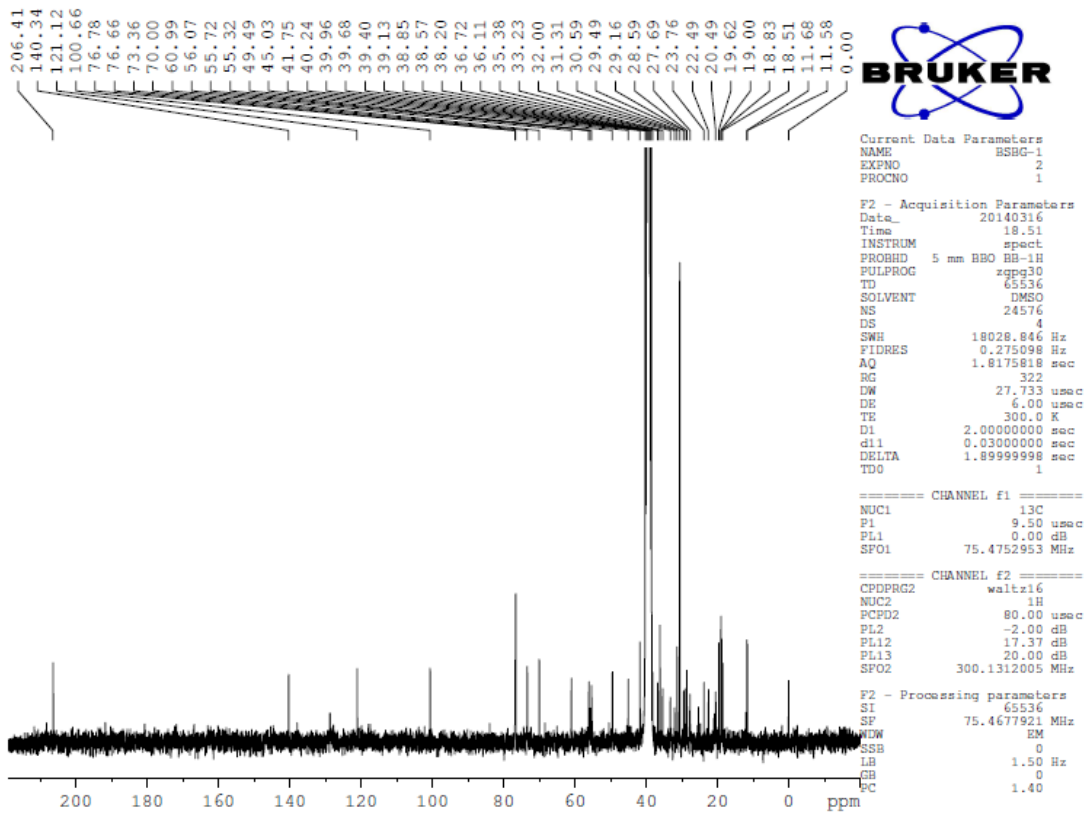


Fig. S8: ^{13}C NMR of BS after 20 min exposure to sunlight

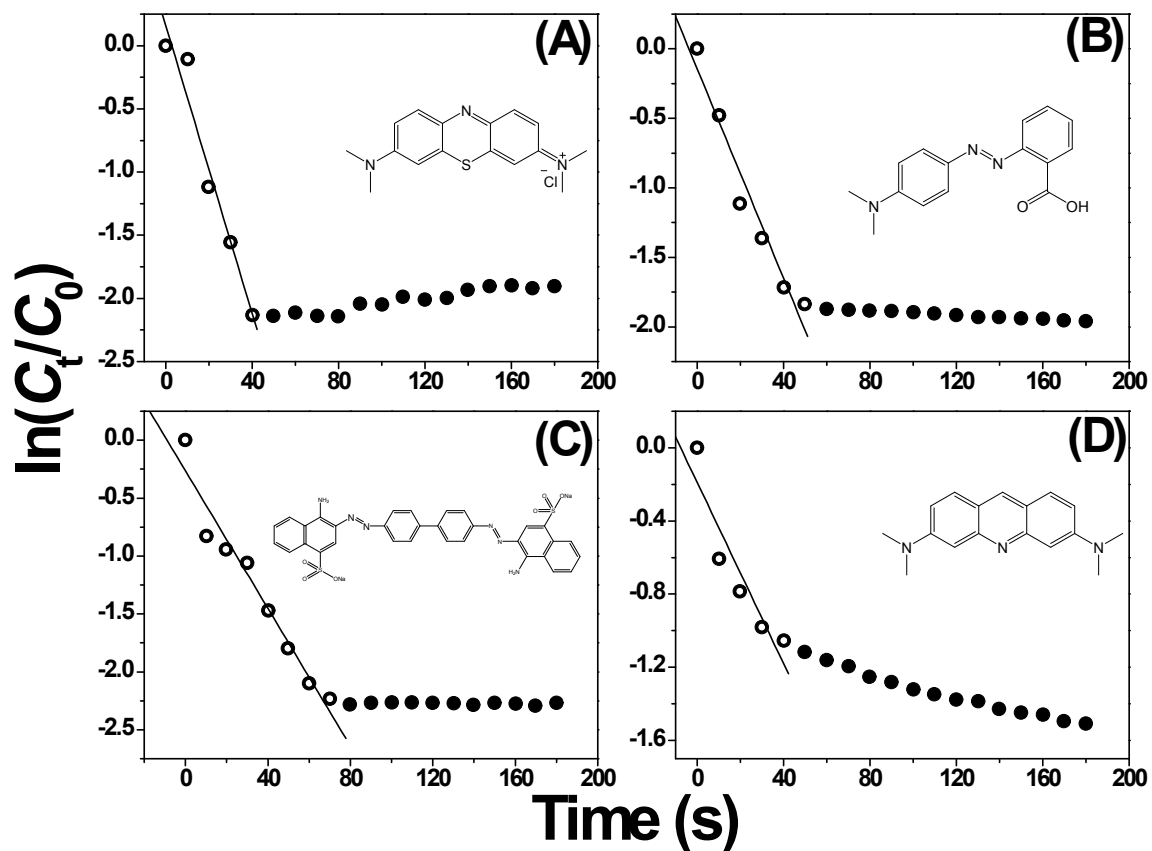


Fig. S9: Rate constant determination for the catalytic degradation of (A) Methylene blue, (B) Methyl red, (C) Congo red and (D) Acridine orange. Plot of $\ln(C_t/C_0)$ versus reaction time. C_t/C_0 is calculated based on the absorbance maximum. 15 μM of dye solution were mixed with NaBH_4 (50 mM) and 50 μL of AgNPs (1 mM) to initiate the reduction. *Inset* corresponds to the structure of dye.