

## Supporting Information

### **Green electrolysis of silver decorated MoS<sub>2</sub> nanocomposite with enhanced antibacterial effect and low cytotoxicity**

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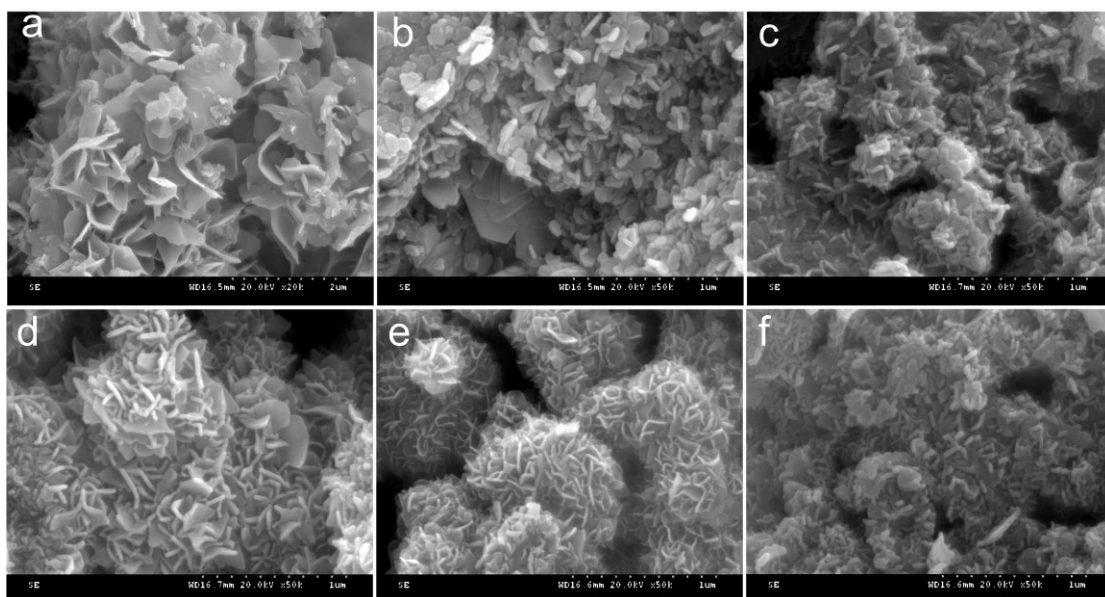
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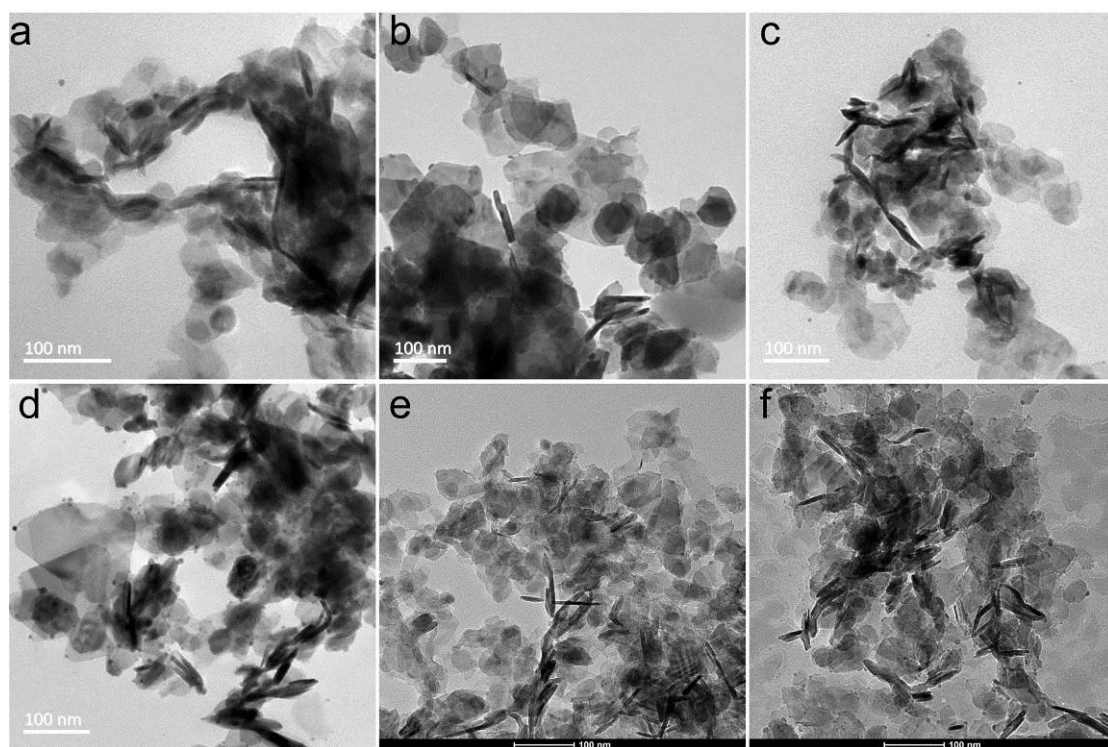
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Table S1. Counting Results (CFU) of *E.coli* and *S.aureus* cultured with different concentrations of materials from Figure 4a

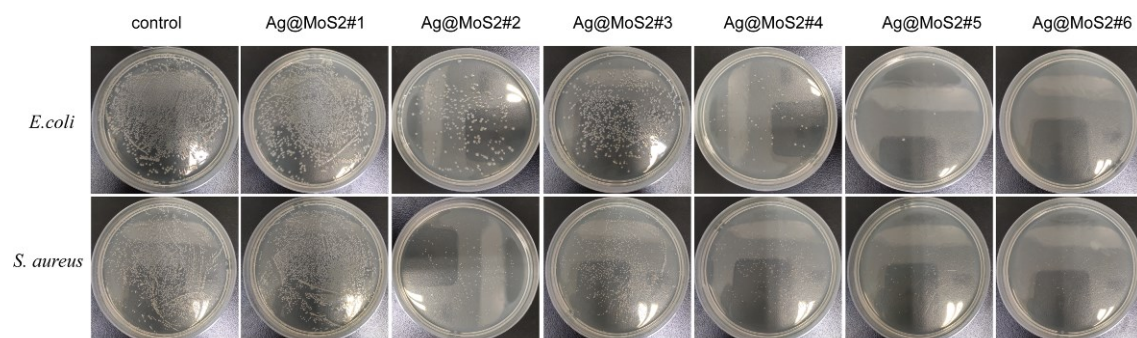
Group	<i>E. coli</i>		<i>S. aureus</i>	
	#6	#5	#6	#5
control	1024	1168	6500	4028
10 µg/mL	1	7	528	747
20 µg/mL	0	1	1	48
50 µg/mL	0	0	1	4



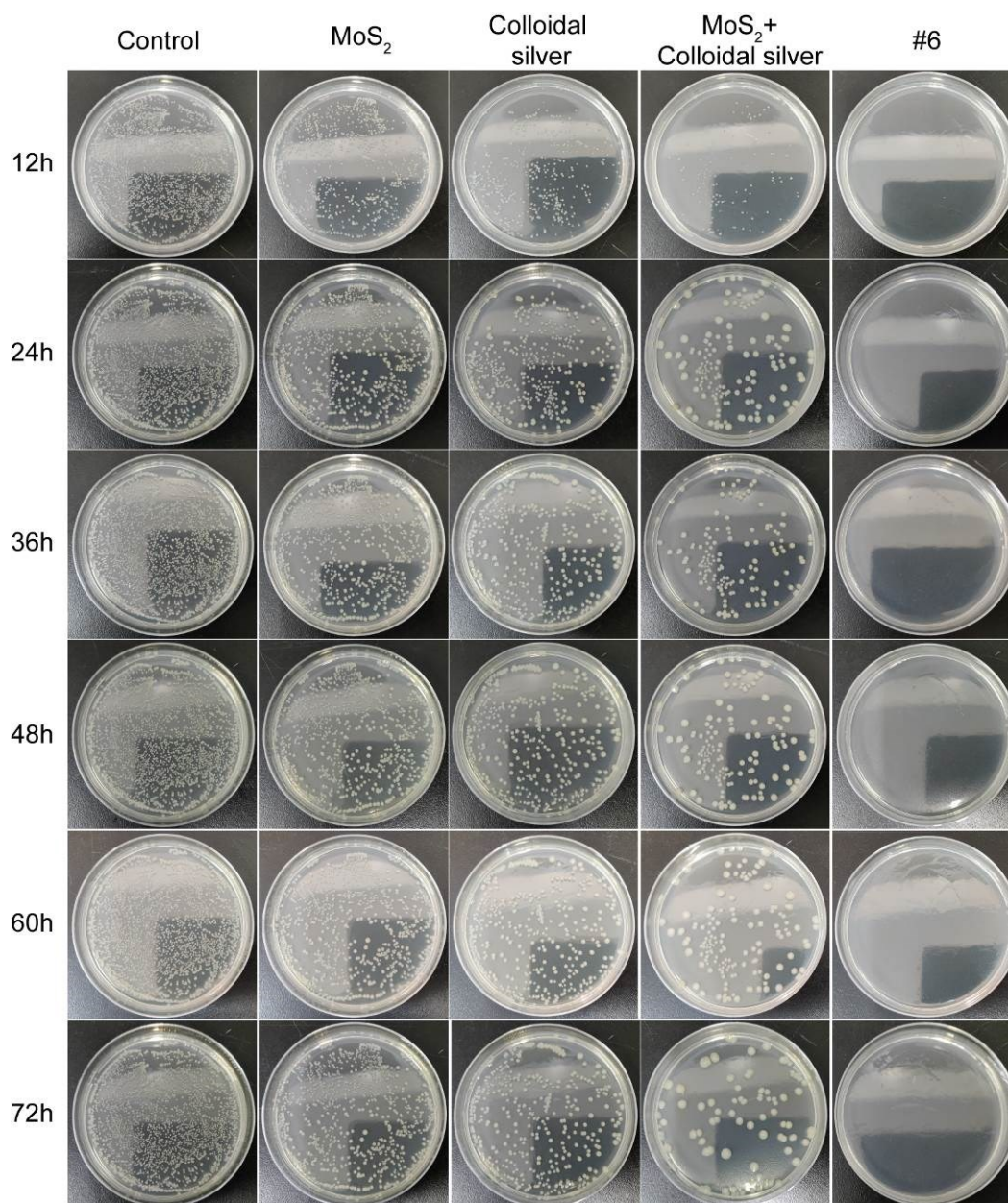
**Figure S1.** The SEM image of an Ag-doped MoS<sub>2</sub> nanosheets with the weight ratios of Ag of 1.5 % (a) , 2.15 % (b), 2.44 % (c), 2.56 % (d), 3.26 % (e), and 6.72 % (f).



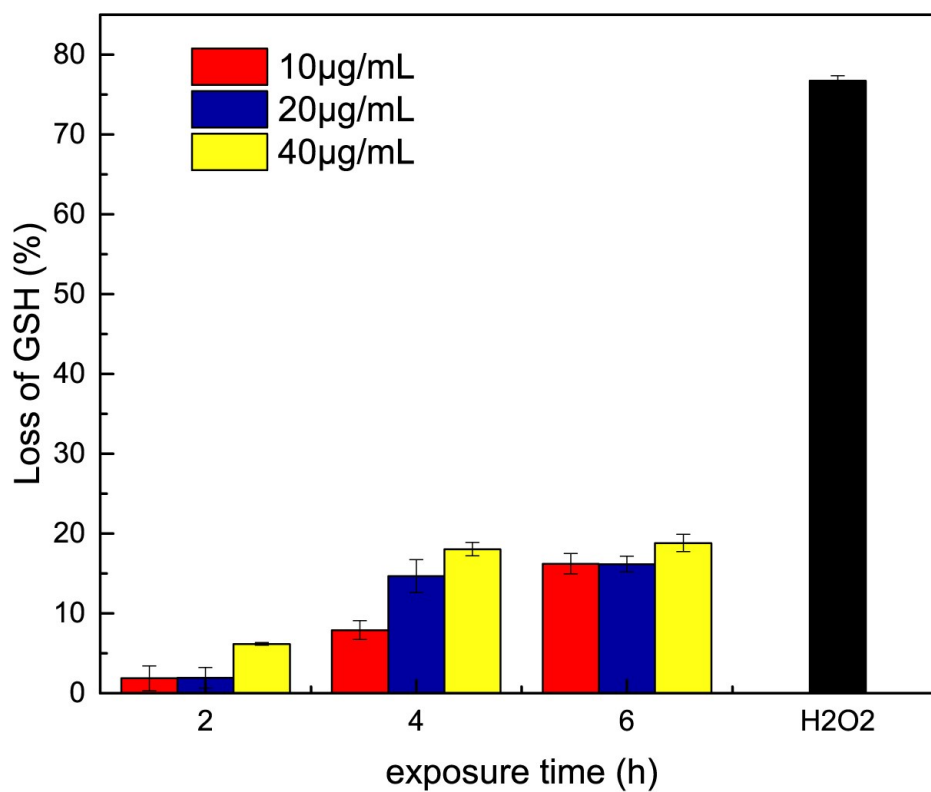
**Figure S2.** The TEM image of an Ag@MoS<sub>2</sub> nanosheets with Ag content ratios of 1.5 % (a), 2.15 % (b), 2.44 % (c), 2.56 % (d), 3.26 % (e), and 6.72 % (f).



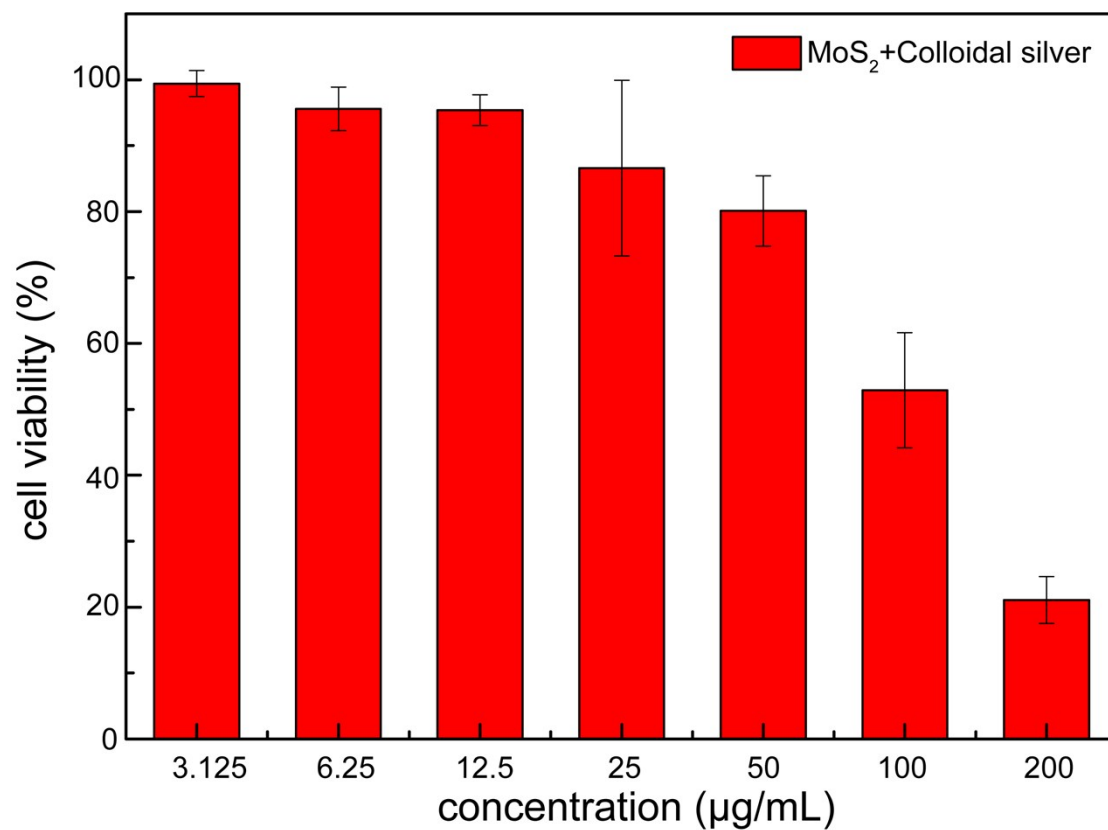
**Figure S3.** The optical images of *E. coli*, *S. aureus* incubated 4h with Ag@MoS<sub>2</sub> of 5μg/mL



**Figure S4.** The optical images of the long-term antibacterial effect of samples including #6 (Ag@MoS<sub>2</sub>#6), MoS<sub>2</sub>, colloidal silver and MoS<sub>2</sub> mixed with colloidal silver.



**Figure S5.** Oxidation of glutathione by Ag@ MoS<sub>2</sub>#6. Loss of GSH (0.4 mM) after in vitro incubation Ag@ MoS<sub>2</sub>#6 dispersions with different concentrations for 2, 4 and 6h. H<sub>2</sub>O<sub>2</sub> (1 mM) was used as a positive control. The bicarbonate buffer without MoS<sub>2</sub> materials was used as a negative control.



**Figure S6.** The cytotoxicity of MoS<sub>2</sub> mixed with colloidal silver on BEAS-2B cells. Error bars represented standard deviations (n = 3).