# Electronic Supplementary Information

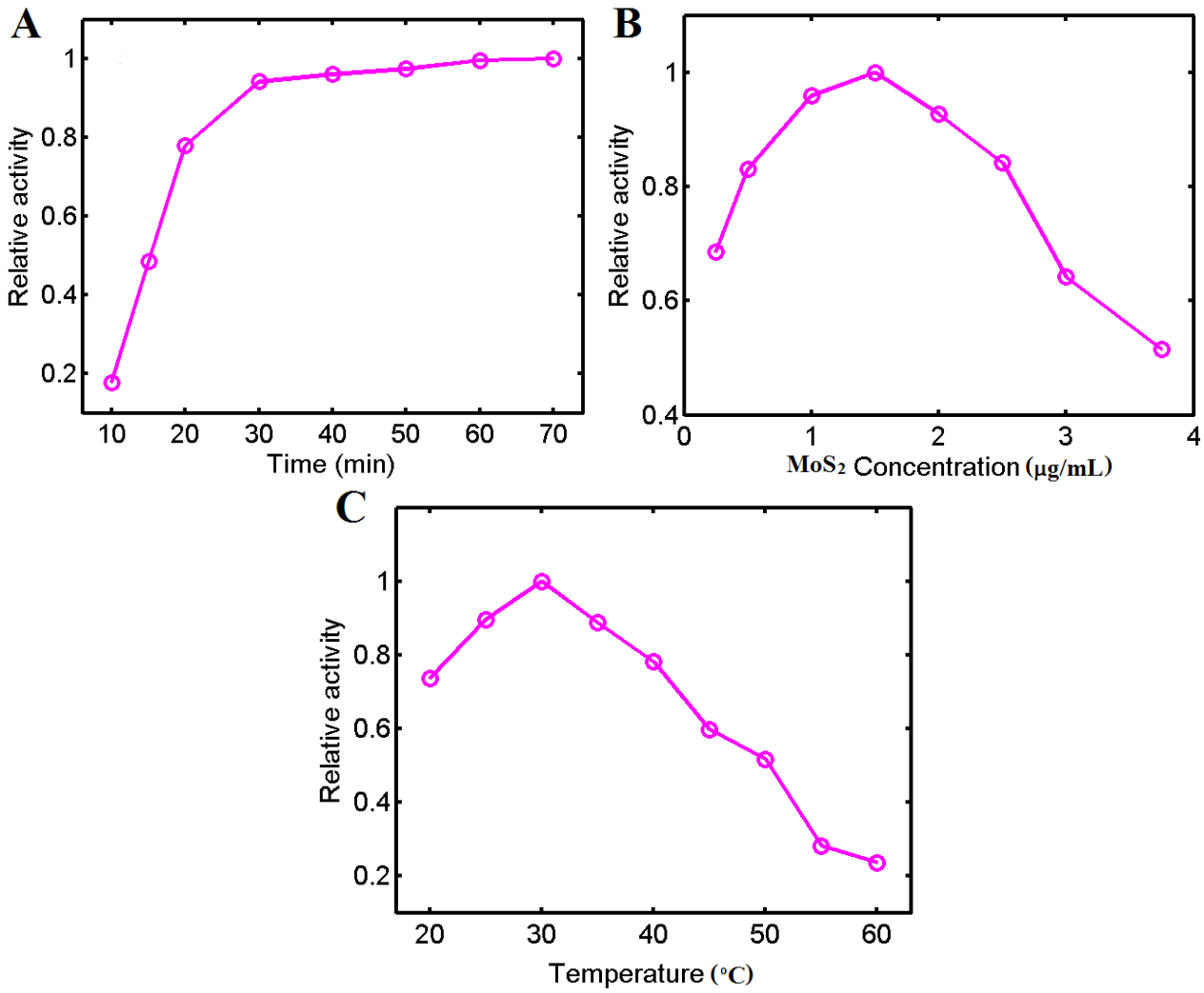


**Figure S1.** Effects of: (A) time, (B) $MoS_2$ concentration and (C) temperature, on the catalytic activity of the $MoS_2$. Experiments were carried out using 1.0 μg $mL^{-1}$ $MoS_2$ in 1.0 mL 0.1 M acetate buffer (pH 4.0); 2.0 μM $H_2O_2$, was added together with 0.45mM TMB as the substrate. The reaction volume was 2.0 mL, and the mixture above was allowed to react at 30 °C for 40 min. The maximum point in each curve was set at 1.0.

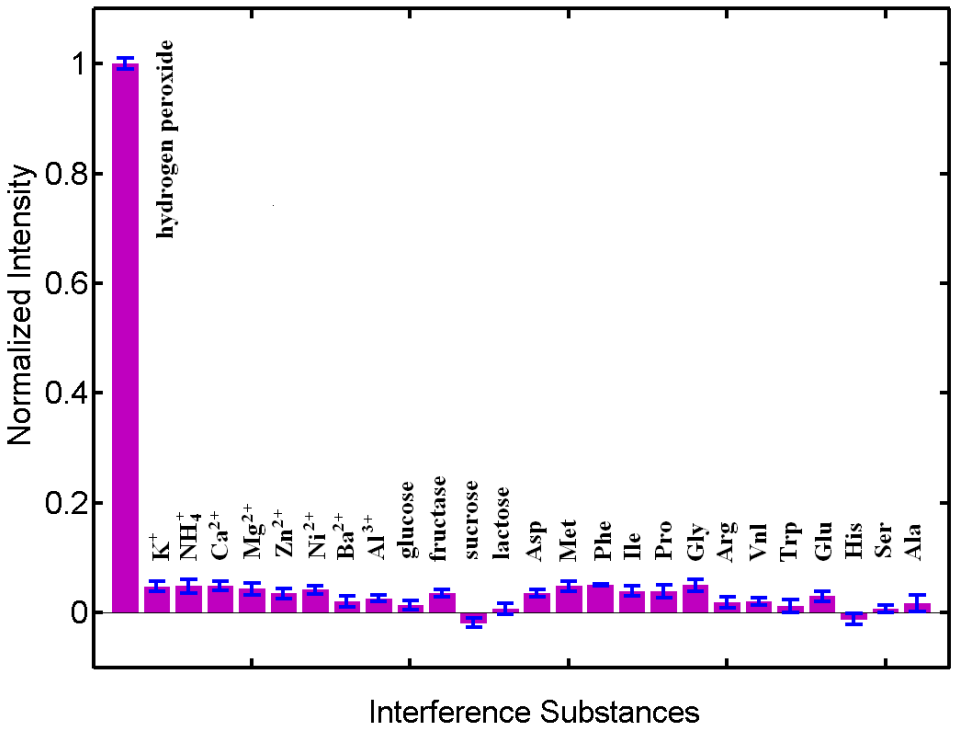


**Figure S2.** Effects of different interfering substances on the detection of $H_2O_2$ dissolved in the $MoS_2$-TMB solution. In brief, 20 μM $H_2O_2$ was added to reaction mixture together with different interfering substances: common metal cations (10 μM) included: $K^+$, $NH_4^+$, $Ca^{2+}$, $Mg^{2+}$, $Zn^{2+}$, $Ni^{2+}$, $Ba^{2+}$ and $Al^{3+}$; glucose, fructase, sucrose, lactose and various amino acids (50 μM) including Asp, Met, Phe, Ile, Pro, Gly, Arg, Vnl, Trp, Glu, His, Ser and Ala.

The above diagram represents the effects of the interferences normalized on a % scale. The colorimetric method involved the monitoring of the absorbance change at 652 nm with a UV-vis spectrophotometer.