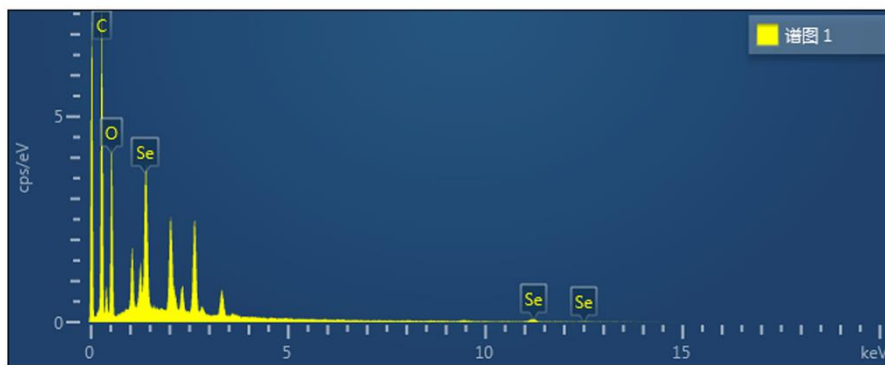


(a)



(b)

Figure 1: Synthesis and characterization of selenium-enriched *B. Paralicheniformis* SR14. (a) Appearance of the culture medium and scanning electron microscope (SEM) images of *B. Paralicheniformis* SR14 cultures with or without the presence of selenite. (b) EDX analysis.

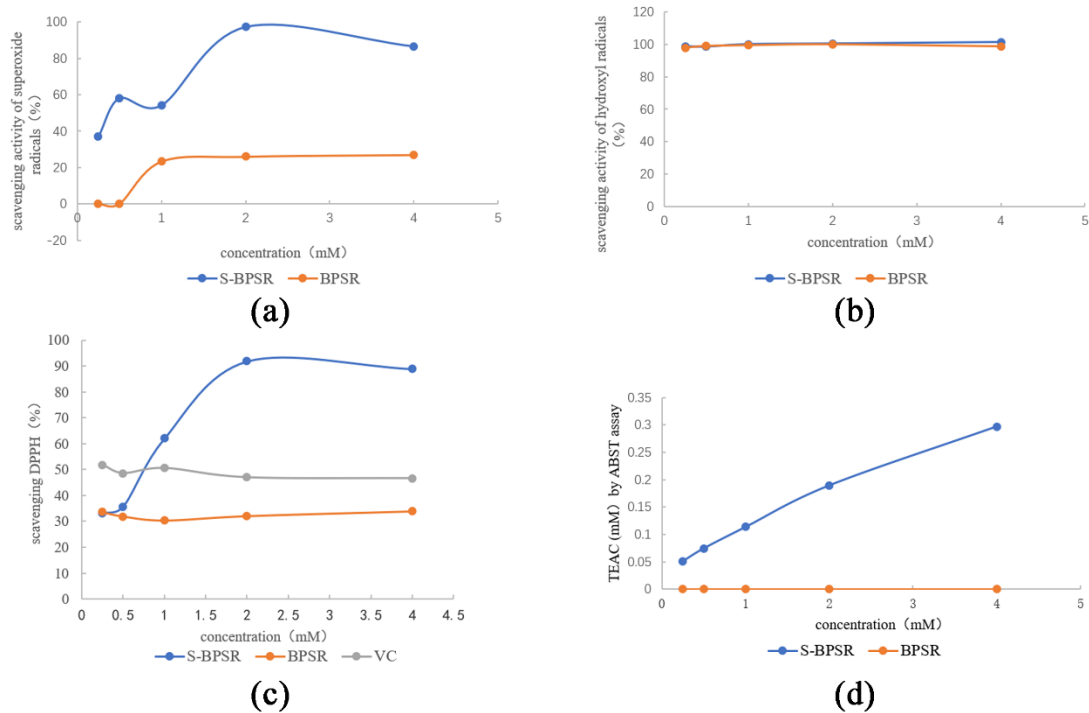


Figure 2: Antioxidant properties of selenium-enriched *B. Paralicheniformis* SR14 (S-BPSR) and *B. Paralicheniformis* SR14 (BPSR). (a) Scavenging activity of superoxide radicals. (b) Scavenging activity of hydroxyl radicals. (c) Scavenging activity of DPPH radicals, Vitamin C (Vc) is used as a reference compound. (d) Scavenging activity of ABTS radicals.

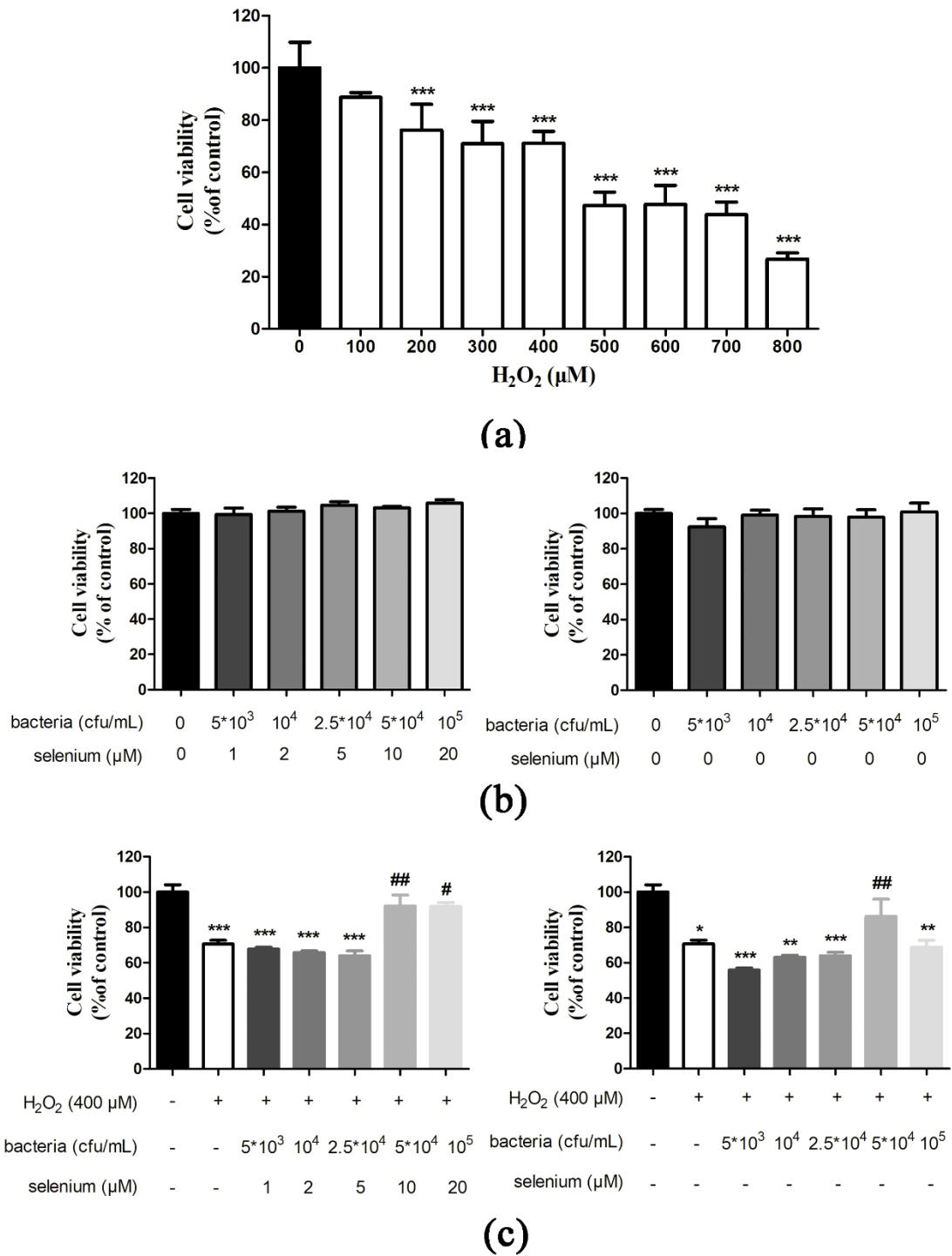
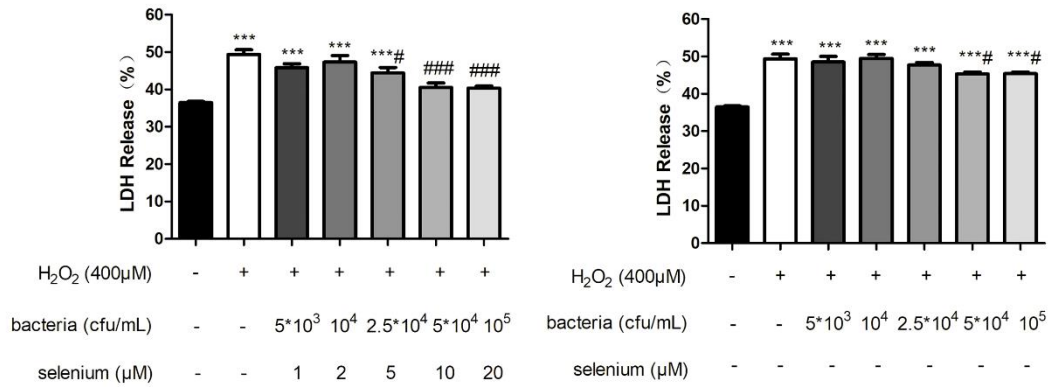
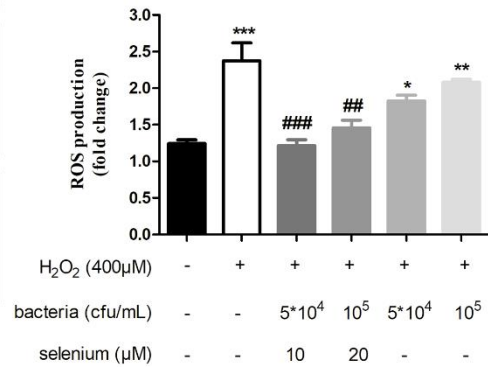
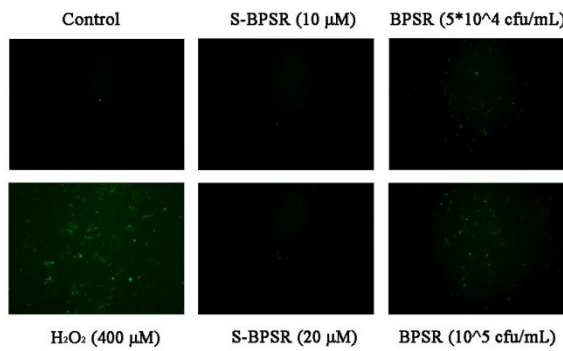


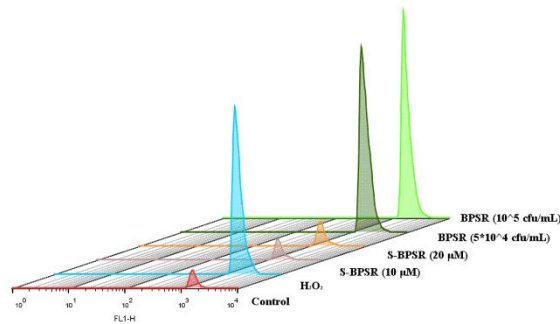
Figure 3: Selenium-enriched *B. Paralicheniformis* SR14 (S-BPSR) inhibits hydrogen peroxide (H₂O₂) induced cytotoxicity in IPEC-J2 cells. (a-c) IPEC-J2 cells were incubated with H₂O₂ (100-800 μM) or S-BPSR or *B. Paralicheniformis* SR14 (BPSR), respectively.



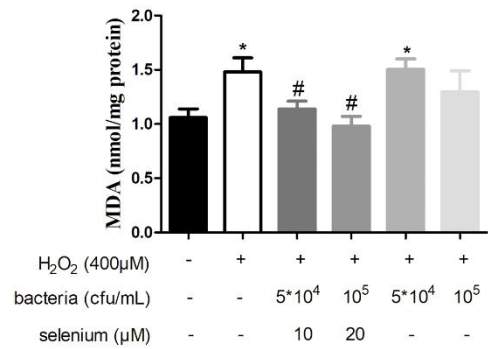
(a)



(b)

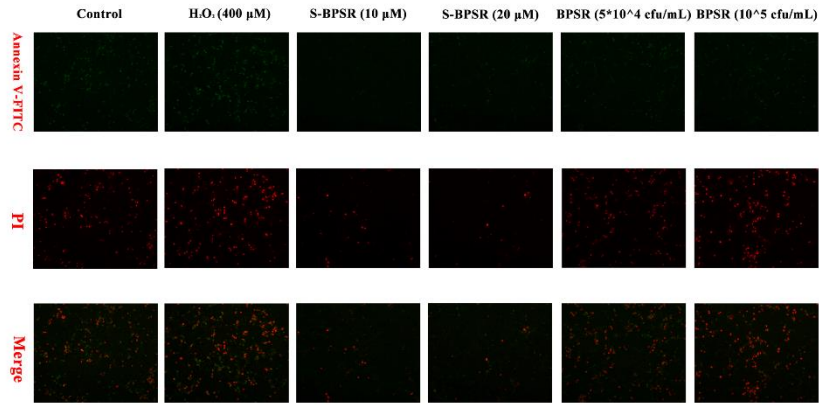


(c)

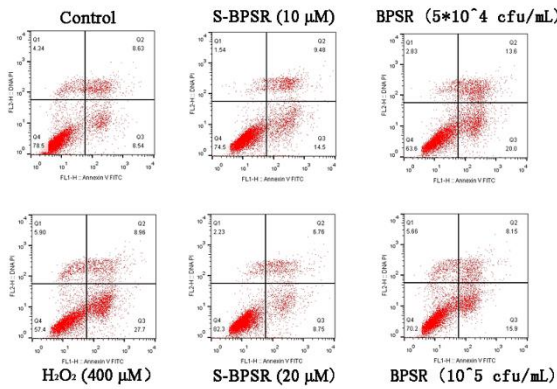


(d)

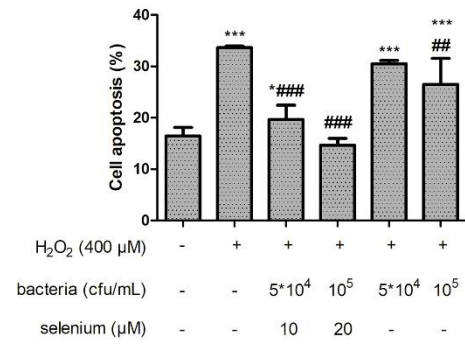
Figure 4: Effects of selenium-enriched *B. Paralicheniformis* SR14 (S-BPSR) on LDH, ROS and MDA in damaged IPCE-J2 cells. (a) LDH levels. (b) Intracellular ROS levels and fluorescence images. (c) Fluorescence intensity of DCF-stained cells. (d) Intracellular MDA levels.



(a)



(b)



(c)

Figure 5: Effects of selenium-enriched *B. Paralicheniformis* SR14 (S-BPSR) on H₂O₂-induced IPEC-J2 cells apoptosis. (a) Cell apoptosis showed by fluorescence images. (b) Cell apoptosis showed by flow cytometry. (c) Statistical data of flow cytometry.

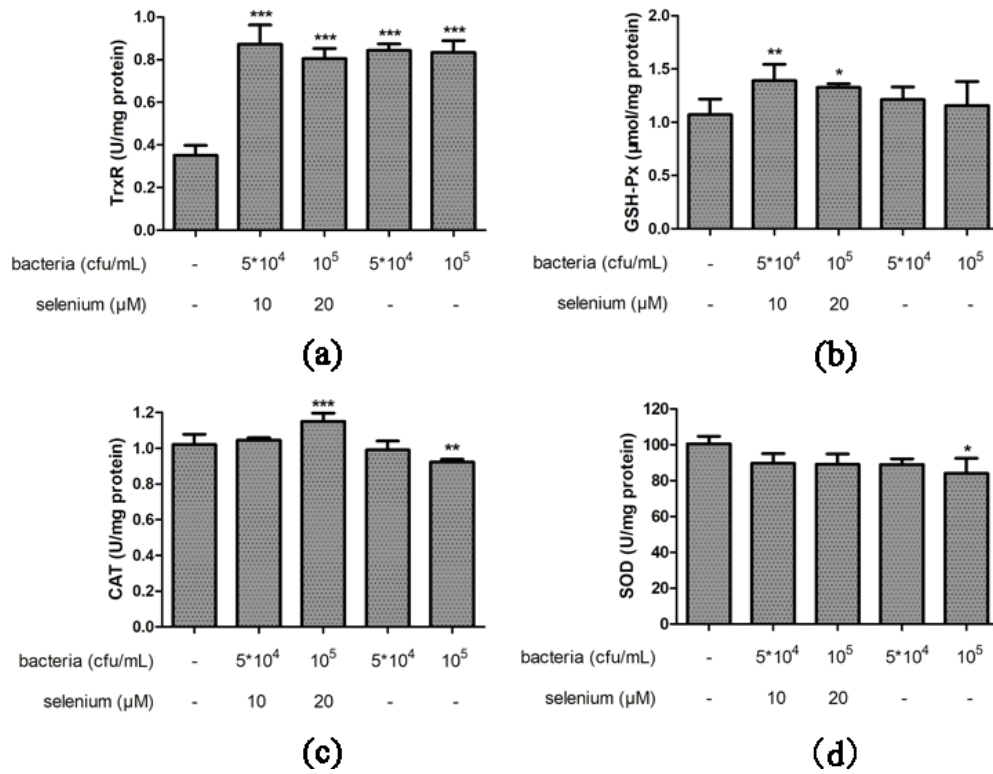


Figure 6: Effects of selenium-enriched *B. Paralicheniformis* SR14 (S-BPSR) on TrxR, GSH-Px, CAT and SOD in IPEC-J2 cells. (a) The intracellular TrxR level of IPEC-J2. (b) The intracellular GSH-Px level of IPEC-J2. (c) The intracellular CAT level of IPEC-J2. (d) The intracellular SOD level of IPEC-J2.

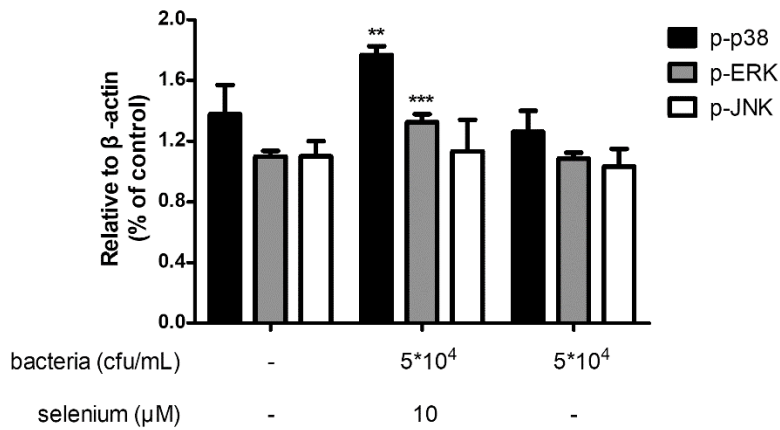
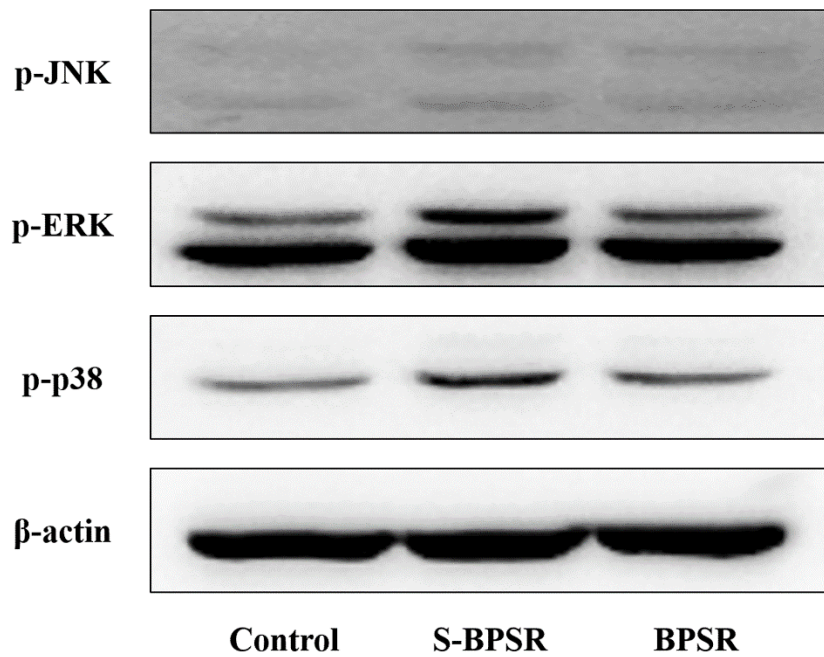


Figure 7: Effects of selenium-enriched *B. Paralicheniformis* SR14 (S-BPSR) on MAPK signaling pathway in IPEC-J2 cells. Cell lysates were prepared and subjected to Western Blotting to detect the phosphorylation (p) of JNK, ERK and p38.

Table 1: Composition of selenium-enriched *B. Paralicheniformis* SR14 (S-BPSR) and *B. Paralicheniformis* SR14 (BPSR).

Group	Dry matter (g/L)	Total selenium content (mg/kg)	Elemental selenium content (mg/kg)	Bacterial counts (cfu/mL)
S-BPSR	38.20	4132.2	1489.1	10 ⁷
BPSR	37.18	-	-	10 ⁸