

Supplementary materials

1. Methods

1.1 Minimum Inhibitory Concentration (MIC₉₀) of sodium selenite by microdilution method (MIC₉₀)

Sodium selenite (Sigma, Cat. No: S5261-10G) was prepared as a 4 mg/mL solution. The absorbance value (OD₆₀₀ value) of each *H. pylori* bacterial solution was detected using a UV-visible spectrophotometer, and OD₆₀₀=0.3 corresponded to a concentration of *H. pylori* of 1×10⁸ CFU/mL, and the working concentration was 1×10⁶ CFU/mL, with pairwise fold dilution of sodium selenite. Positive control, blank control were set and the results were noted after 72 h of incubation.

1.2 CCK8 method for the detection of sodium selenite toxicity

GES-1 and BGC823 cells were taken and configured into 1×10⁵ cells/mL cell suspension, medium blank control and cell blank control were set, each group of 3 repetitions, and sodium selenite solution was added after 18-24 h after cultured cells, and the final working concentrations were 1 μmol/L, 2 μmol/L, 4 μmol/L, 5 μmol/L and 8 μmol/L, respectively, PBS was used as a negative control, and sodium selenite was added and cultured for 24 h. According to the instructions method of CCK8 kit, CCK8 reagent was added, incubated for 4 h and detected with a multifunctional microplate reader, calculated by "cell survival rate = (drug action cell well-medium blank control well)/(cell blank control well-medium blank control well)".

1.3 Growth curves of *H. pylori* were detected by UV-visible spectrophotometer

Hp G27 and NSH57 bacterial solution were taken, the initial concentration was 1×10⁵ CFU/mL bacterial suspension cultured, and the OD₆₀₀ value of the bacterial solution was detected and recorded every 8 h until the OD₆₀₀ showed a downward trend to terminate the detection.

2. Results

2.1 MIC of sodium selenite against *H. pylori* strains.

Sodium selenite is one of the drugs that supplement trace element selenium, which belongs to one of the inorganic selenium and has certain toxicity. Therefore, it is necessary to understand the bacteriostatic effect and cytotoxicity of sodium selenite on *H. pylori*, and the selection of sodium selenite on the induction time of *H. pylori* strain. As shown in Table S1, sodium selenite has 32 µg/mL (i.e., 185 µmol/L) for sensitive *H. pylori* strains such as Hp G27, Hp 26695, NSH57, and drug-resistant strains such as Hp 159.

2.2 Toxic effect of sodium selenite on cells.

5 µmol/L sodium selenite has no obvious toxic effect on GES-1 and BGC823 cells, 8 µmol/L sodium selenite has a certain toxic effect on GES-1, but has no obvious toxicity to BGC823, as shown in Figure S1 A,B, 4 µmol/L sodium selenite has no obvious toxic effect on the liver, spleen and kidney of mice, as shown in Figure S1 D.

2.3 Growth curve of *H. pylori* strains.

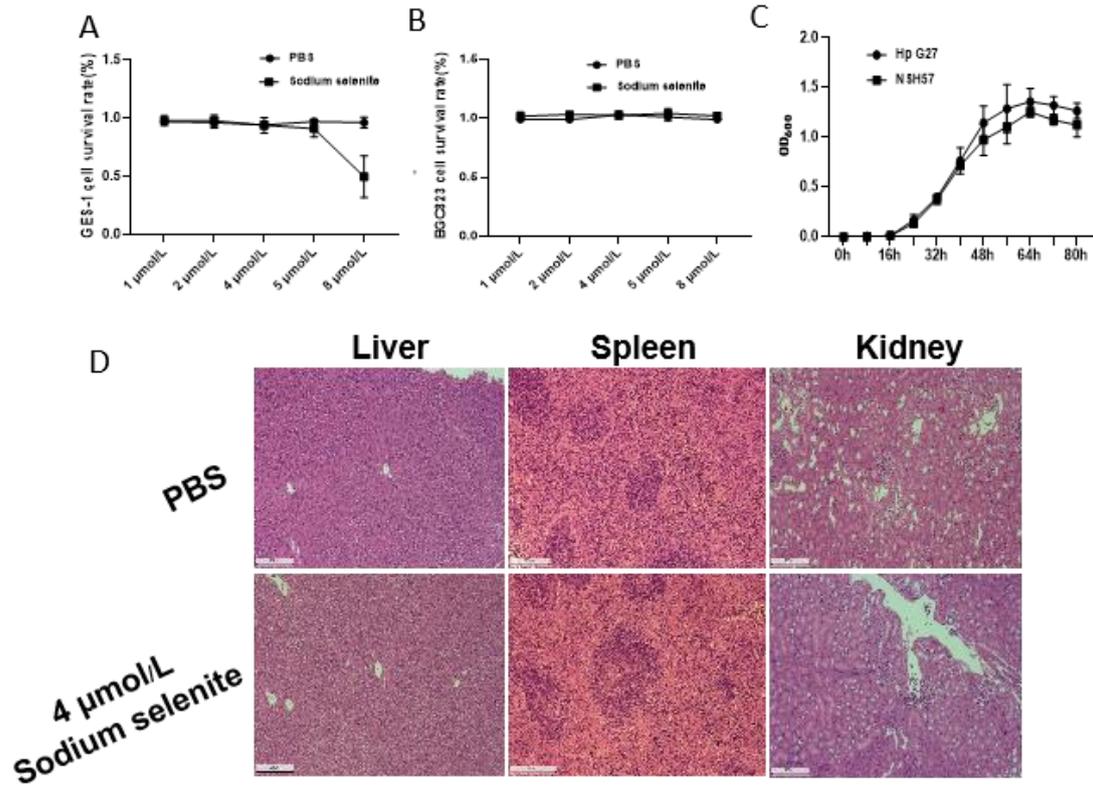
Hp G27 and NSH57 were cultured at 1×10^5 CFU/mL for 0-24 h, 24-56 h, 56-64 h, and 64-80 h, respectively, as shown in Figure S1 C.

In summary, the safe value of sodium selenite for *H. pylori* should be <185 µmol/L and $\cong 5$ µmol/L for cells, and the induction is 24-56 h per cycle in the logarithmic phase, and 48 h (2 days) per cycle according to the convenience of operation.

Supplementary Table 1 The bacteriostatic effects of sodium selenite on different strains of *H. pylori*

Strain	Drug resistance	MIC (µmol/L)
G27	Sensitive	185
26695	Sensitive	185
159	Resistant to MRT,CLA and LEV	185
NSH57	Sensitive	185

The abbreviation for antibiotic are follows, MET, metronidazole; CLA, clarithromycin; LEV, levofloxacin.



Supplementary Figure 1 Sodium selenite toxicity test. A: The toxic effect of sodium selenite on GES-1 cells; B: The toxic effects of sodium selenite on BGC823 cells; C: Growth curves of *H. pylori*; D: Effects of 4 μmol/L sodium selenite by gavage on the liver, spleen and kidney of mice.