

Sodium benzoate is association with salmonella typhi resistant to chloramphenicol

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Abstrak

Objective: There are many factors that govern growth and resistant of *Salmonella typhi*. A study had reported that the use of sodium benzoate caused antibiotic resistant. However, no study has directly evaluated the effect of sodium benzoate exposure on *S. typhi* sensitivity to chloramphenicol. The aim of this study was to evaluate the resistance or sensitivity of *S. typhi* to chloramphenicol after sodium benzoate exposure. **Methods:** The study was conducted in seven groups: three treatment groups (sodium benzoate insensitive *S. typhi*+8 μg/mL, 16 μg/mL, and 32 μg/mL of chloramphenicol), three positive control groups (sodium benzoate sensitive *S. typhi*+8 μg/mL, 16 μg/mL, and 32 μg/mL of chloramphenicol), and one negative control groups (sodium benzoate sensitive *S. typhi*+0 μg/mL of chloramphenicol). The effect of sodium benzoate exposure to *S. typhi* sensitivity to chloramphenicol was measured after 24 hours. Spearman test was used to analyzed this association. **Results:** In this study, we found that the average *S. typhi* growth in the treatment groups (A, B, C) was 445 CFU/mL, 385 CFU/mL, and 171 CFU/mL, respectively. While in the positive control group (D, E, F) was not obtained any *S. typhi* growth. Average *S. typhi* growth in the negative control group was 430 CFU/mL. We found that sodium benzoate exposure inhibited *S. typhi* growth and affected *S. typhi* sensitivity to chloramphenicol ($p<0.05$). In addition, we found that 32 μg/mL chloramphenicol had the highest mean difference value, so this showed that the dose 32 μg/mL of chloramphenicol had the best effectiveness of various treatment groups ($p<0.05$). **Conclusions:** Sodium benzoate exposure can inhibit *S. typhi* growth and cause *S. typhi* resistant to chloramphenicol.;