1. INTRODUCTION

2. ANTIBIOTIC RESISTANCE: PLASMIDS AND EFFLUX PUMPS
   2.1. Mutation and resistance
   2.2. Infectious resistance
   2.3. Plasmid mediated resistance
   2.4.1. Plasmids
   2.4.2. Tn elements
   2.5.1. Drug accumulation and efflux mechanisms
   2.5.2. Efflux pumps and drug resistance
   2.5.3. Efflux pumps in Gram-positive and Gram-negative bacteria
   2.6. Proton motive forces and drug efflux
   2.7. Other functions of efflux pumps
   2.8. Interactions of antibiotics with some efflux pumps and other drugs

3. AIMS OF THE STUDY

4. MATERIALS AND METHODS
   4.1. Materials
   4.2. Methods
   4.2.1. Determination of minimum inhibitory concentration (MIC)
   4.2.2. Checkerboard method
   4.2.3. Time killing method
   4.2.4. Elimination of the F' lac plasmid
   4.2.5. Elimination of R-plasmid and Replica plating
   4.2.6. Fluoro-luminometric viability analysis of Escherichia coli cells using GFP-luciferase combination
5. RESULTS

5.1. Determination of minimum inhibitory concentrations (MICs) of some antibiotics and the effects of combinations with resistance modifiers against Gram negative and Gram positive strains

5.2. Antimicrobial effects and interactions of antibiotics with diacetyl-dihydropyridines and dibenzoaldihydropyridines on *Escherichia coli* strains

5.2.1. Antibacterial effects and interactions of ampicillin and erythromycin with 3,5-diacetyl-1,4-dihydropyridines (AcDHPs) (G1-G11)

5.2.2. The antibacterial effects and interactions of 3,5-dibenzoyl-1,4-dihydropyridines (BzDHPs) (GB1-GB15)

5.3. Antibacterial effects and interactions of antibiotics and resistance modifiers on methicillin-resistant *Staphylococcus aureus* strains

5.4. Studies on plasmid elimination

5.5. Fluoro-luminometric analysis of drug interaction between ampicillin with promethazine on *Escherichia coli* containing green fluorescence protein and luciferase

6. DISCUSSION

7. SUMMARY

8. REFERENCES

9. ACKNOWLEDGMENT