Technical Report

**Evaluation of MIC of (*E*)-2-(benzo[*d*]thiazol-2(3*H*)-ylidene)-2-cyanoethanethioamide on some bacterial related to nosocomial infection and assessment of anticancer effects by MTT method**

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Research Project Number: 560

Date: 2015/10/19

**Introduction**: Spread of antibiotic-resistant strains of nosocomial gram-negative bacteria is a serious threat to patients, hospital personnel and general health. Researchers consider identifying and using of novel antibacterial compounds as one of the most effective solutions to this threat. Thiazole derivatives are of the most recognized new antibacterial compounds and in this study, antibacterial effect of (*E*)-2-(benzo[*d*]thiazol-2(3*H*)-ylidene)-2-cyanoethanethioamide against three Gram-negative nosocomial bacteria, *Proteus mirabilis*, *Shigella dysenteriae* and *Acinetobacter baumannii* has been evaluated. Also, its anticancer activities have been studied on cancer cell lines of mouse melanoma (B16F10), breast (MCF-7) and prostate (PC-3).

**Materials and Methods**: For the aim of assessing antibacterial effect, the disk diffusion method and the dilution procedure in 96-well plate were used to determine the diameter of growth inhibition zone and the minimum inhibitory concentration (MIC), respectively. For assaying effect of new synthesized compound on cancer cell lines, cell viability was assessed using AlamarBlue® dye and protocol.

**Results and discussion**: The inhibitory effect of thiazole derivative was proven on *Proteus mirabilis* and *Shigella dysenteriae* with halo diameter of 16.4 mm and 19.3 mm as well as MIC of 125 µg/ml and 62.5 µg/ml, respectively, ofcourse this compound itself had no inhibitory effect on *Acinetobacter baumannii*. Inhibitory effects of this derivative was found on cancer cell lines.

**Conclusion**: In this study, the inhibitory effect of novel thiazole derivative was shown on two bacteria, *Proteus mirabilis* and *Shigella dysenteriae* and three cancer cell lines of mouse melanoma (B16F10), breast (MCF-7) and prostate (PC-3). This compound can be used as antibacterial and anticancer agent if additional *in vitro* and *in vivo* tests are carried out and its therapeutic effects and toxicity are investigated.