World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:9, No:03, 2015

Evaluation of in vitro Inhibitory Effect of Enoxacin on Babesia and Theileria Parasites

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Abstract : Enoxacin is a broad-spectrum 6-fluoronaphthyridinone antibacterial agent (fluoroquinolones) structurally related to nalidixic acid used mainly in the treatment of urinary tract infections and gonorrhea. Also, it has been shown recently that it may have cancer inhibiting effect. The primary antibabesial effect of Enoxacin is due to inhibition of DNA gyrase subunit A, and DNA topoisomerase. In the present study, enoxacin was tested as a potent inhibitor against the in vitro growth of bovine and equine Piroplasms. The in vitro growth of five Babesia species that were tested was significantly inhibited ($P<0.05$) by micromolar concentrations of enoxacin (IC50 values= 13.5, 7.2, 7.5, and 24.2 µM for Babesia bovis, Babesia bigemina, Babesia caballi, and Theileria equi, respectively). Enoxacin IC50 values for Babesia and Theileria parasites were satisfactory as the drug is a potent antibacterial drug with minimum side effects. Therefore, enoxacin might be used for the treatment of Babesiosis and Theileriosis especially in case of mixed infections with bacterial diseases or in the case of animal sensitivity against diminazin toxicity.

Keywords : enoxacin, Babesia, Theileria, IC50 and dimenazin
Conference Title : ICVBS 2015 : International Conference on Veterinary and Biomedical Sciences
Conference Location : Prague, Czechia
Conference Dates : March 23-24, 2015