

In vitro antibacterial activity of dihydroanthracene disulfonic acid derivative against *Enterobacter Cloacae*

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Abstract

Background: Antibiotic resistance is one of the biggest threats to global health and it is rising to dangerously high levels worldwide, making us vulnerable towards the bacterial diseases and threatening our ability to treat them.

Aims: This paper describes the in vitro antibacterial effect of the dihydroanthracene disulfonic acid derivative preparation (patent DE102004003030A1) that was tested successfully in a severe case diagnosed with Necrotizing Fasciitis. In this patient the infection resulted with mixed bacterial strains and we tested the strain of *Enterobacter Cloacae* isolated from clinical specimen of this patient. This strain resulted resistant to ceftazidim, ceftriaxone, cefepime, aztreonam and sensitive to amikacin, imipenem and meropenem. This in vitro study was conducted in order to measure the antibacterial activity of dihydroanthracene

disulfonic acid derivative against resistant bacterial strains.

Methods: The method of macrodilution was used in the Microbiological Laboratory of the University Hospital Center “Mother Theresa” Tirana. The method consisted in progressively decreasing the amount of the antimicrobial preparation in the test tubes with Mueller Hinton. In the first test tube we added 20% solution of dihydroanthracene disulfonic acid derivative, which activity we wanted to test and in all the other test tubes we progressively decreased the amount of our preparation and added Mueller-Hinton broth. After the dilution we incubated the 12 test tubes for 24 hours and we cultivated the above in MacConkey agar plates for 24 hours.

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Results: The in vitro antibacterial effect of dihydroanthracenedisulfonic acid derivative resulted equivalent to the in vitro effect of Imipenem (MIC \leq 0.25), Meropenem (MIC \leq 0.25), Amikacin (MIC 8), Colistin (MIC \leq 0.5) in the isolated strain of *Enterobacter Cloacae*.

Conclusions: The good antibacterial activity shown in the above case, demonstrates that this preparation is promising for treating life threatening resistant microorganisms infections. Further studies are needed to evaluate the full pharmacological activity of dihydroanthracenedisulfonic acid derivative in vitro.

Key words: in vitro techniques, antibacterial activity, dihydroanthracene disulfonic acid derivative, macrodilution method, microbiology.