Title: ANTAGONISTIC ACTIVITY OF *Acinetobacter baumannii* STRAINS RECOVERED FROM BLOOD CULTURES

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Abstract:

The genus *Acinetobacter* includes Gram negative, obligate aerobic, oxidase negative coccobacilli, unable to ferment carbohydrates to generate energy. The organisms are ubiquitous, being widely distributed in natural environments and often found colonizing human skin. Among *Acinetobacter* species *A. baumannii* should be highlighted. The bacterium is associated with the etiopathogenesis of nosocomial infections, specially those involving individuals hospitalized in intensive care units. Several microorganisms are able to express antimicrobial substances of proteinaceous nature that play a pivotal ecological role and also exhibit a great potential for biotechnological application. This study aimed to assess antagonistic substance synthesis by *A. baumannii* strains isolated from blood cultures. Antagonism expression by 19 *A. baumannii* isolates, which constituted the test group, was evaluated by the double-layer diffusion method. As indicator strains the test group and also nine reference strains were included. Diverse culture conditions were used including different culture media (composition and pH) and incubation parameters (temperature and period). The presence of bacteriophages, fatty acids, residual chloroform, and hydrogen peroxide was investigated to rule out the possibility of interference in the interpretation of positive results. After initial screening a test strain that gave positive results was employed for subsequent steps of the investigation. The producer strain was subjected to acid precipitation with HCl 2 N. Crude extract was titrated employing the spread plate technique. Only one of the 19 isolates that comprised our test group, named *A. baumannii* 397, expressed antagonism. The activity was observed exclusively against other *A. baumannii* strains, characterizing the isoantagonism phenomenon. Antagonism expression was detected only when the producing strain was cultivated in Brain Heart Infusion Agar supplemented with yeast extract, at 25 °C. Generated inhibition zones were large and clear. All interfering factors were discarded. The titre of antagonistic activity was found to be 320 AU (arbitrary units)/mL. Our data demonstrate the synthesis of antagonistic substance(s) by *A. baumannii*, a property that has not been described for the species yet.

Keywords: *Acinetobacter*, *Acinetobacter baumannii,* antagonistic substance, protein extraction

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