

**TITLE:** ANTIMICROBIAL ACTION OF RIPARINS I, II AND III AGAINST *Serratia marcescens* AND *Proteus mirabilis* MULTIDRUG-RESISTANT CLINICAL ISOLATES

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**ABSTRACT:**

*Proteus mirabilis* and *Serratia marcescens* are opportunistic microorganisms that present intrinsic resistance to several antimicrobials and high capacity to acquire multiple mechanisms of resistance, consequently only a limited number of antimicrobials remain available for clinical use. The emergence of these multidrug-resistant species (MDR) has led to the search for new compounds with antimicrobial action. *Aniba riparia* (Nees) Mez exhibits several biological activities, including antimicrobial, anxiolytic, antidepressant and antispasmodic. The aim of this study was to investigate the antimicrobial activity with determination of the minimum inhibitory concentration (MIC) of riparins I, II and III against *Serratia marcescens* and *Proteus mirabilis* multidrug-resistant (MDR) clinical isolates. Riparins I, II and III were obtained from the green fruit of *A. riparia*, according to methodology established in the Laboratory of Pharmaceutical Technology/UFPB. Two clinical isolates were evaluated: *Serratia marcescens*, obtained from post-surgical wound, and *Proteus mirabilis*, obtained from a urine sample, both from patients admitted to the general ICU of a public hospital in Recife/PE with identification performed at the source hospital and confirmed in the laboratory by conventional biochemical tests. Antimicrobial action was analyzed by microdilution in Mueller Hinton broth in 96-well microplates at concentrations: 800 to 6.25µg/mL, according to the parameters of the Clinical & Laboratory Standards Institute (CLSI, 2019). Inoculums were adjusted to 0.5 McFarland standard, followed by addition of 1µL at each concentration assessed. After 24h in incubator at 37°C, the microbial turbidity was read and the results were confirmed by colorimetric test with resazurin (0.01%), in addition, all analyzes were performed in quadruplicate in independent experiments. From the evaluated concentrations of riparins I, II and III, the clinical isolate of *S. marcescens* exhibited sensitivity only at the highest concentration evaluated (800µg/mL). In relation to *P. mirabilis*, only riparin III showed antimicrobial action at the highest concentration evaluated, being resistant to other riparins. Therefore, this study indicates that other analyzes should be carried out regarding the antimicrobial activity and mechanisms of action of riparins I, II and III, due to the numerous reports of the multidrug resistance profile of clinical isolates involved in healthcare-associated infections.

**Keywords:** Riparina, *Serratia marcescens*, *Proteus mirabilis*, Enterobacteriaceae

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