

**TITLE:** ANTIMICROBIAL ACTIVITY OF RIPARINS I, II AND III AGAINST CLINICAL ISOLATES OF *Staphylococcus aureus* OBTAINED FROM HOSPITAL IN MACEIÓ/AL

**AUTHORS:** OLIVEIRA-JÚNIOR, J.B.;<sup>1</sup> MAGALHÃES, F. M.;<sup>1</sup> ALVES, M. M.;<sup>1</sup> FIRMO, E. F.;<sup>1</sup> LIMA, F. C. G.;<sup>1</sup> GUTIERREZ, S. J. C.;<sup>3</sup> CAMARA, C. A.;<sup>4</sup> BARBOSA-FILHO, J. M.;<sup>5</sup> VERAS, D. L.;<sup>2</sup> BRAYNER, F. A.<sup>1,2</sup>

**INSTITUTION:** <sup>1</sup>UNIVERSIDADE FEDERAL DE PERNAMBUCO (AV. PROF. MORAES REGO, 1235 - CIDADE UNIVERSITÁRIA, RECIFE/PE, CEP 50670-901, BRAZIL). <sup>2</sup>INSTITUTO AGGEU MAGALHÃES/FIOCRUZ-PE (AV. PROF. MORAES REGO, S/N - CIDADE UNIVERSITÁRIA, RECIFE/PE, CEP 50670-420, BRAZIL). <sup>3</sup>UNIVERSIDADE FEDERAL DE PIAUÍ (CAMPUS UNIVERSITÁRIO MINISTRO PETRÔNIO PORTELA, SG-8 - BAIRRO ININGA, TERESINA/PI, CEP 64049-550, BRAZIL). <sup>4</sup>UNIVERSIDADE FEDERAL RURAL DE PERNAMBUCO (RUA DOM MANUEL DE MEDEIROS, S/N - DOIS IRMÃOS, RECIFE/PE, CEP 52171-900, BRAZIL). <sup>5</sup>UNIVERSIDADE FEDERAL DA PARAÍBA (CAMPUS I - LOT. CIDADE UNIVERSITÁRIA, JOÃO PESSOA/PB, CEP 58051-900, BRAZIL).

**ABSTRACT:**

*Staphylococcus aureus* is a Gram-positive bacteria, responsible for high rates of healthcare-associated infections (HAI) in hospitalized patients, considering the various mechanisms of antimicrobial resistance available and high virulence potential. *Aniba riparia* (Nees) Mez belongs to the family Lauraceae, being popularly known as laurel. This vegetal species exhibits several biological activities, including muscle relaxant, antimicrobial, anxiolytic, antidepressant and antispasmodic. The aim of this study was to investigate the MRSA (Methicillin-resistant *S. aureus*) phenotype in *S. aureus* clinical isolates and analyze the antimicrobial activity with determination of the minimum inhibitory concentration (MIC) of riparins I, II and III against the clinical isolates with MRSA phenotype. 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. Four isolates of *S. aureus* from patients hospitalized in a hospital in Maceió/AL with identification performed at the source hospital and confirmation in laboratory by mass spectrometry (MALDI-TOF) were obtained. All experiments were performed in quadruplicate. The determination of the MRSA phenotype was performed by microdilution in Mueller Hinton broth (Ca<sup>+2</sup>) in 96-well microplates, according to 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 evaluate. After 24h of incubation in incubator at 37°C, the microbial turbidity was read. Antimicrobial activity of the riparins was determined by microdilution in Mueller Hinton broth at concentrations: 400µL to 6.25µL. All isolates evaluated had MIC ≥ 4 for oxacillin, which confers the phenotypic MRSA, according to parameters CLSI (2019). Of the riparins I, II and III tested, only riparin II exhibited antimicrobial activity against one *S. aureus* clinical isolates at concentration of 400µg/mL. Other bacterial strains showed resistance to riparins I, II and III. Thus, this study confirms that compounds obtained from *A. riparia* exhibit antimicrobial activity in isolates of *S. aureus* with MRSA phenotype, inferring that future tests with extracts or natural compounds are necessary, since the decrease in the efficacy of antimicrobials available in HAI involving bacterial MDR isolates.

**Keywords:** *Aniba riparia*, *Staphylococcus aureus*, MRSA, minimum inhibitory concentration

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