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Bio-inorganic non- β -lactamase metallo antibiotics

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The fast emerging in antimicrobial resistance has been the timely challenge for all classes of antibiotics, temporarily assuaging the concerns of modern medicine. Nowadays, there has been a significant retraction on the drugs design and research investment to attain new antimicrobial medicines by the major pharmaceutical companies with the coinciding escalation in global nosocomial infection. Metallo-antibiotic compounds has been less related with medicine applications and here we are presenting new results about the antimicrobial activity of a series of chelators having N and O functionalities and its vanadium complexes as a lane of research developed with particular emphasis to test its antibiotic activity against the emergent so called "ESKAPE" super bugs. Some of the most serious infections caused by ESKAPE strains are bacteremia, pneumonia, osteomyelitis, acute endocarditis, myocarditis, pericarditis, cerebritis, meningitis, chorioamnionitis, scalded skin syndrome, abscesses of the muscle, urogenital tract, central nervous system, and various intra abdominal organs. The proposed artificial antibiotics and its derived complexes have being synthesized between dipicolonic acid (found in bacteria's cell wall), 2-methylsallylate, anthranilic acid, and NH_4VO_3 . Those non- β -lactamase chelators and its vanadium compounds, are still acting as either cytotoxic or bacteriostatic agents against a broad scope of bacterial strains. The *in vitro* preliminary screening with Gram-(positive/negative) strains suggests powerful growth inhibition activity on different bacteria viz., *Staphylococcus aureus*; *Staphylococcus epidermidis*; *Bacillus cereus*; *Streptococcus faecalis*; *Acinetobacter baumannii*; *Citrobacter freundii*; *Salmonella typhimurium*; *Serratia marcescens*; *Escherichia coli*; *Enterobacter aerogenes*; *Enterobacter cloacae*; *Klebsiella pneumoniae*; *Pseudomonas aeruginosa*, and *Proteus vulgaris*.

Biography

Tulio Chavez-Gil is currently working as an Assistant Professor of Chemistry at Coppin State University, Baltimore, MD. He got his BS in Chemistry at Universidad del Valle (Cali, Colombia) where he worked as Researcher Assistant designing the Coals and Petroleum Lab in the School of Engineering. He earned his PhD in Inorganic Chemistry at Universidade de São Paulo, (São Paulo, BR) in 1997. He spent 2 years (1997-1999) as Post-doctoral fellow at University of Kumamoto (Japan) and other 2 (2000-2002) at University of Puerto Rico - Mayaguez. His academic accomplishments include positions at Universidad de Los Andes (Bogota, Col - 2003), Inter-American University of Puerto Rico (2004-2014). He has authored/coauthored 27 peer-reviewed publications (5 in Geology), one patent application and more than 70 research/educational presentations. He has been awarded with the Cnpq scholarship award (BR), the Japan Society for the Promotion of Science (JSPS), the MBRS-NIH award (UPR), and the Ronald E McNair mentorship award 2007-2014 at IAUPR. He is serving as an Editorial Board Member for the *Structural Chemistry & Crystallography Communication Journal*.

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