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(54) **NOVEL ANTI-MICROBIAL PEPTIDOMIMETIC COMPOUNDS AND METHODS TO CALCULATE ANTI-MICROBIAL ACTIVITY**

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(76) **Inventors:** **RICKEY P. HICKS**, Greenville, NC (US); **Diva Karamenon Venugopal**, Gaithersburg, MD (US); **Jayendra Bhonsle**, Germantown, MD (US)

(57) **ABSTRACT**

This invention encompasses synthetic antimicrobial peptide analogs having certain un-natural amino acids, including the un-natural amino acids hydrophobic tetrahydroisoquinoline-carboxylic acid (Tic) and octahydroindolecarboxylic acid (Oic), incorporated into the polypeptide backbone. These antimicrobial peptides (AMPs) are useful to treat infection in humans and other mammals of such bacteria as Gram positive bacteria, Gram negative bacteria and *Mycobacterium*. Many of the AMPs also exhibit the property of reduced hemolytic activity. The invention also entails 3D-QSAR models and mathematical equations that calculate the biological activity of any peptide sequence against *Staphylococcus aureus* or *Mycobacterium ranae*.

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