## **Supplementary**

**Supplementary Table 1: Covariance parameters for laboratory comparison analysis.**

|  |  |  |  |
| --- | --- | --- | --- |
| Estimates of Covariance Parametersa | | | |
| Parameter | | Estimate | Std. Error |
| Residual | | .233446 | .008180 |
| LabID | Variance | .222382 | .026820 |

1. Dependent Variable: LogMIC.

**Supplementary Table 2: Type III Tests of Fixed Effects investigating *Escherichia coli* provenance bias.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type III Tests of Fixed Effectsa | | | | |
| Source | Numerator df | Denominator df | F | Sig. |
| Intercept | 1 | 510.746 | 613.323 | .000 |
| E.coli Provenance | 1 | 1645.968 | .003 | .957 |

1. Dependent Variable: LogMIC.

**Supplementary Table 3: Type III Tests of Fixed Effects investigating method bias.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type III Tests of Fixed Effectsa | | | | |
| Source | Numerator df | Denominator df | F | Sig. |
| Intercept | 1 | 232.876 | 1178.215 | .000 |
| StandardisedMethod | 1 | 1699.351 | .505 | .477 |

1. Dependent Variable: LogMIC.

**Supplementary Table 4: Type III Tests of Fixed Effects investigating differences between minimum inhibitory concentrations values of peptide and peptidomimetic compounds.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type III Tests of Fixed Effectsa | | | | |
| Source | Numerator df | Denominator df | F | Sig. |
| Intercept | 1 | 177.918 | 293.045 | .000 |
| PeptidePeptidomimetics | 1 | 191.174 | .772 | .381 |

1. Dependent Variable: LogMIC.

**Supplementary Table 5: Type III Tests of Fixed Effects investigating length effect on minimum inhibitory concentration values.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type III Tests of Fixed Effectsa | | | | |
| Source | Numerator df | Denominator df | F | Sig. |
| Intercept | 1 | 217.139 | 522.763 | .000 |
| Length | 1 | 425.670 | 1.328 | .250 |

1. Dependent Variable: LogMIC

**Supplementary Table 6: Type III Tests of Fixed Effects investigating molecular weight effect on minimum inhibitory concentration values.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type III Tests of Fixed Effectsa | | | | |
| Source | Numerator df | Denominator df | F | Sig. |
| Intercept | 1 | 248.464 | 656.522 | .000 |
| MolecularWeight | 1 | 509.603 | 2.210 | .138 |

1. Dependent Variable: LogMIC.

**Supplementary Table 7: Type III Tests of Fixed Effects investigating charge effect on minimum inhibitory concentration values.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type III Tests of Fixed Effectsa | | | | |
| Source | Numerator df | Denominator df | F | Sig. |
| Intercept | 1 | 283.342 | 779.996 | .000 |
| Charge | 1 | 1040.264 | 63.075 | <.001 |

1. Dependent Variable: LogMIC.

**Supplementary Table 8: Estimates of Fixed Effects. Further investigation on charge effect of minimum inhibitory concentration values.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Estimates of Fixed Effectsa | | | | | | | |
| Parameter | Estimate | Std. Error | df | t | Sig. | 95% Confidence Interval | |
| Lower Bound | Upper Bound |
| Intercept | 1.543930 | .055282 | 283.342 | 27.928 | .000 | 1.435115 | 1.652745 |
| Charge | -.045907 | .005780 | 1040.264 | -7.942 | .000 | -.057249 | -.034564 |

1. Dependent Variable: LogMIC.

**Supplementary Table 9:** **Studies included in this meta-analysis.** Table 10 specifically includes studies with AMP data.

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Title** | **Lab Group** | **Reference** |
| 2020 | Ib-M6 Antimicrobial Peptide: Antibacterial Activity against Clinical Isolates of Escherichia coli and Molecular Docking | Facultad de Ciencias Exactas, Naturales y Agropecuarias, Ciencias Básicas Aplicadas para la Sostenibilidad—CIBAS | [49] |
| 2020 | Identification and antimicrobial mechanisms of a novel peptide derived from egg white ovotransferrin hydrolysates | National Research and Development Center for Egg Processing, Key Laboratory of Environment Correlative Dietology, College of Food Science and Technology, Huazhong Agricultural University | [50] |
| 2020 | [Development of chimeric peptides to facilitate the neutralisation of lipopolysaccharides during bactericidal targeting of multidrug-resistant Escherichia coli](https://www.nature.com/articles/s42003-020-0761-3) | Gene Engineering Laboratory, Feed Research Institute, Chinese Academy of Agricultural Sciences, 100081 Beijing, | [51] |
| 2020 | Comparing Cathelicidin Susceptibility of the Meningitis Pathogens *Streptococcus suis* and *Escherichia coli* in Culture Medium in Contrast to Porcine or Human Cerebrospinal Fluid | Department of Physiological Chemistry, University of Veterinary Medicine Hannover, Foundation, Hanover | [52] |
| 2020 | Circumventing colistin resistance by combining colistin and antimicrobial peptides to kill colistin-resistant and multidrug-resistant Gram-negative bacteria | Allen School, Washington State University, Pullman, Washington, | [53] |
| 2020 | The antimicrobial peptide Temporin L impairs *E. coli* cell division by interacting with FtsZ and the divisome complex | Department of Chemical Sciences, University of Naples "Federico II" Via Cinthia 4, 80126 Napoli | [54] |
| 2020 | Antibacterial action of lactoferricin B like peptide against *Escherichia coli* : reactive oxygen species‐induced apoptosis‐like death | School of Life Sciences, BK21 Plus KNU Creative BioResearch Group, Kyungpook National University, Daegu | [55] |
| 2020 | Design and Synthesis of Lipopolysaccharide-Binding AntimicrobialPeptides Based on Truncated Rabbit and Human CAP18 Peptidesand Evaluation of Their Action Mechanism | Department of Biotechnology, School of Medicine, SemnanUniversity of Medical Sciences, Semnan | [56] |
| 2020 | Antimicrobial peptide selection from *Lippia spp* leaf transcriptomes | Genetics and Biotechnology Graduate Program, Juiz de Fora Federal University, Juiz de Fora | [57] |
| 2020 | Antimicrobial Activity of the Antibacterial Peptide PMAP‑GI24 and Its Analogs | College of Animal Science and Technology, Henan University of Science and Technology, Luoyang, Henan, | [58] |
| 2020 | An active domain HF-18 derived from hagfish intestinal peptide effectively inhibited drug-resistant bacteria *in vitro*/*vivo* | School of Life Science and Technology, China Pharmaceutical University, Nanjing, Jiangsu | [59] |
| 2020 | High Cell Selectivity and Bactericidal Mechanism of Symmetric Peptides Centered on d-Pro–Gly Pairs | College of Animal Science and Technology, Jilin Agricultural University, Xincheng Street No.#2888, Changchun 130118 | [60] |
| 2020 | Structural characterization and biological activity of Crabrolin peptide isoforms with different positive charge | Department of Physical and Chemical Sciences, University of L'Aquila, Via Vetoio, 67100 L'Aquila | [61] |
| 2020 | [Binding Properties of DNA and Antimicrobial Peptide Chensinin-1b Containing Lipophilic Alkyl Tails](https://link.springer.com/article/10.1007/s10895-019-02478-x) | School of Life Science, Liaoning Normal University, Dalian 116081 | [62] |
| 2020 | Identification and Rational Design of a Novel Antibacterial Peptide Dermaseptin-AC from the Skin Secretion of the Red-Eyed Tree Frog Agalychnis callidryas | Natural Drug Discovery Group, School of Pharmacy, Queen’s University Belfast, Belfast BT9 7BL, Northern Ireland | [63] |
| 2020 | Peptide-Carbon Quantum Dots conjugate, Derived from Human Retinoic Acid Receptor Responder Protein 2, against Antibiotic-Resistant Gram Positive and Gram Negative Pathogenic Bacteria | Department of Chemistry and Biochemistry, Mendel University in Brno, Zemedelska 1, CZ-613 00 Brno | [64] |
| 2020 | [caP4: A 2.97 KDa Cationic Antibacterial Peptide from Curcuma pseudomontana L.](https://link-springer-com.libproxy.ucl.ac.uk/article/10.1007/s10989-019-09883-7) | JSS Research Foundation, SJCE Technical Institution Campus, Mysuru, Karnataka 570006 | [65] |
| 2020 | Antimicrobial activity of Ib-M peptides against *Escherichia coli* O157: H7 | Maestrı ́a enInvestigacio ́n enEnfermedades Infecciosas, FacultaddeCienciasdela Salud,GrupodeInvestigacio ́n enCienciasBa ́sicasy Aplicadasparala sostenibilidad– CIBAS,UniversidaddeSantander,Bucaramanga | [66] |
| 2020 | Antimicrobial Activity of RP-1 Peptide Conjugate With Ferrocene Group | Department of Biochemistry and Technological Chemistry, Institute of Chemistry, São Paulo State University (UNESP), Araraquara | [67] |
| 2020 | Trematocine, a Novel Antimicrobial Peptide From the Antarctic Fish *Trematomus bernacchii*: Identification and Biological Activity | Department for Innovation in Biological, Agrofood and Forest Systems, University of Tuscia, 01100 Viterbo | [68] |
| 2020 | Potent Antibacterial Activity of MSI-1 Derived From the Magainin 2 Peptide Against Drug-Resistant Bacteria | School of Life Science and Technology, China Pharmaceutical University, Nanjing, Jiangsu 211198 | [69] |
| 2020 | Antibacterial activity and mechanism of the cell-penetrating peptide CF-14 on the gram-negative bacteria, Escherichia coli | Key Laboratory of Biotechnology and Bioresources Utilization (Dalian Minzu University), Ministry of Education, Dalian, Liaoning, 116029 | [70] |
| 2020 | Assessment of a Novel Antimicrobial Peptide against Clinically Isolated Animal Pathogens and Prediction of Its Thermal-Stability | School of Medicine, Shahroud University of Medical Sciences, Shahroud | [71] |
| 2020 | A novel endogenous antimicrobial peptide CAMP211-225 derived from casein in human milk | anjing Maternity and Child Health Care Hospital, the Women’s Hospital ofNanjing Medical University, Nanjing, Jiangsu 210004 | [72] |
| 2020 | Proadrenomedullin N-terminal 20 peptide (PAMP) and its C-terminal 12-residue peptide, PAMP(9–20): Cell selectivity and antimicrobial mechanism | Department of Biomedical Science, Graduate School, and Department of Cellular & Molecular Medicine, School of Medicine, Chosun University, Gwangju, 61452, | [73] |
| 2020 | Study on the effects of different dimerization positions on biological activity of partial d-Amino acid substitution analogues of Anoplin | Key Laboratory of Preclinical Study for New Drugs of Gansu Province, School of Basic Medical Sciences, Lanzhou University, Lanzhou, 730000 | [74] |
| 2020 | Heterologous production of porcine derived antimicrobial peptide PR-39 in *Escherichia coli* using SUMO and intein fusion systems | School of Chemical Engineering-Biotechnology, College of Engineering, Kish International Campus, University of Tehran, Kish | [75] |
| 2020 | Fluorine-19 NMR spectroscopy of fluorinated analogs of tritrpticin highlights a distinct role for Tyr residues in antimicrobial peptides | Biochemistry Research Group, Department of Biological Sciences, University of Calgary, 2500 University Dr. NW, Calgary, Alberta T2N 1N4, | [76] |
| 2020 | Expression and purification of ShLysG in *Escherichia coli* and initial characterization of its antimicrobial, antioxidant and anti-inflammatory activities | Shandong Provincial Engineering and Technology Research Center for Wild Plant Resources Development and Application of Yellow River Delta, College of Biological and Environmental Engineering, Binzhou University, Binzhou, China | [77] |
| 2020 | Mechanisms underlying the antimicrobial actions of the antimicrobial peptides Asp-Tyr-Asp-Asp and Asp-Asp-Asp-Tyr | College of Light Industry and Food, Zhongkai University of Agriculture and Engineering, Guangzhou, Guangdong 510225, China | [78] |
| 2020 | Adepamycin: design, synthesis and biological properties of a new peptide with antimicrobial properties | Laboratório de Purificação de Proteínas e suas Funções Biológicas, Universidade Federal de Mato Grosso do Sul, Cidade Universitária, 79.070-900, Campo Grande, Mato Grosso do Sul, Brazil | [79] |
| 2020 | Antibacterial mechanisms of bacteriocin BM1157 against *Escherichia coli* and *Cronobacter sakazakii* | College of Food Science and Engineering, Northwest A&F University, Yangling, Shaanxi Province 712100, China | [80] |
| 2020 | The effect of lipidation and glycosylation on short cationic antimicrobial peptides | Institute for Infection and Immunity, St. George's University of London, London, UK | [81] |
| 2020 | Antibacterial and antioomycete activities of a novel designed RY12WY peptide against fish pathogens | ICAR-Directorate of Coldwater Fisheries Research, Bhimtal, 263136, Uttarakhand, India | [82] |
| 2020 | *Chlamydomonas reinhardtii*-derived multimer Mytichitin-CB possesses potent antibacterial properties | State Key Laboratory of Food Nutrition and Safety, Institute of Health Biotechnology, College of Food Science and Engineering, Tianjin University of Science and Technology, Tianjin, 300457, PR China | [83] |
| 2020 | Simple amphiphilic *α*-hydrazido acids: Rational design, synthesis, and in vitro bioactivity profile of a novel class of potential antimicrobial compounds | epartment of Life and Environmental Sciences, Polytechnic University of Marche, Via Brecce Bianche, 60131, Ancona, Italy | [84] |
| 2020 | Antibiofilm, antiquorum sensing and antioxidant activity of secondary metabolites from seeds of *Annona senegalensis,* Persoon | Department of Chemical Engineering, Chemical Engineering and Mineral Industries School, University of Ngaoundere, 454 Ngaoundere, Cameroon | [85] |
| 2020 | A broad-spectrum antibiotic adjuvant reverses multidrug-resistant Gram-negative pathogens | Beijing Advanced Innovation Center for Food Nutrition and Human Health, College of Veterinary Medicine, China Agricultural University, Beijing, China | [86] |
| 2020 | Inhibitory and anti-inflammatory effects of two antimicrobial peptides moronecidin and temporin-1Dra against Propionibacterium acnes in vitro and in vivo | Guangdong Provincial Key Laboratory of Medical Molecular Diagnostics, Guangdong Medical University, Dongguan, China. | [87] |
| 2020 | EcDBS1R4, an Antimicrobial Peptide Effective against *Escherichia coli* with In Vitro Fusogenic Ability | Instituto de Medicina Molecular, Faculdade de Medicina, Universidade de Lisboa, 1649-028 Lisbon, Portugal; | [88] |
| 2020 | Antibacterial activity of human defensins against *Staphylococcus aureus* and *Escherichia coli* | Department of Clinical Pharmacology, Stavropol State Medical University, Stavropol, Russian Federation | [89] |
| 2020 | Potent and Specific Antibacterial Activity against *Escherichia coli* O157:H7 and Methicillin Resistant *Staphylococcus aureus* (MRSA) of G17 and G19 Peptides Encapsulated into Poly-Lactic-Co-Glycolic Acid (PLGA) Nanoparticles | Grupo de Investigación en Bioquímica y Microbiología (GIBIM), Universidad Industrial de Santander, Bucaramanga 680002, Colombia | [90] |
| 2020 | Novel Cyclic Lipopeptide Antibiotics: Effects of Acyl Chain Length and Position | Department of Drug Design and Pharmacology, Faculty of Health and Medical Sciences, University of Copenhagen, Universitetsparken 2, 2100 Copenhagen, Denmark | [91] |
| 2020 | In Vitro Activity Analysis of a New Polymyxin, SPR741, Tested in Combination with Antimicrobial Agents against a Challenge Set of Enterobacteriaceae, Including Molecularly Characterized Strains | JMI Laboratories, North Liberty, Iowa, USA | [92] |
| 2020 | EcDBS1R6: A novel cationic antimicrobial peptide derived from a signal peptide sequence | S-Inova Biotech, Pós-graduação em Biotecnologia, Universidade Católica Dom Bosco, Campo Grande, MS, Brazi | [93] |
| 2019 | Medicinal leech antimicrobial peptides lacking toxicity represent a promising alternative strategy to combat antibiotic-resistant pathogens | Federal Research and Clinical Center of Physical-Chemical Medicine of Federal Medical Biological Agency, Moscow, 119435 | [94] |
| 2019 | Profiling antimicrobial peptides from the medical maggot *Lucilia sericata* as potential antibiotics for MDR Gram-negative bacteria | Fraunhofer Institute for Molecular Biology and Applied Ecology, Department of Bioresources, Gießen | [95] |
| 2019 | LFB: A Novel Antimicrobial Brevinin-Like Peptide From the Skin Secretion of the Fujian Large Headed Frog, *Limnonectes fujianensi* | iangsu Key Laboratory for Functional Substance of Chinese Medicine, Nanjing University of Chinese Medicine, 138 Xianlin Avenue, Qixia District, Nanjing 210000, | [96] |
| 2019 | Discovery and structure of the antimicrobial lasso peptide citrocin | Departments of ‡Chemical and Biological Engineering, Chemistry, and Molecular Biology Princeton University, Princeton | [97] |
| 2019 | The antimicrobial peptide thanatin disrupts the bacterial outer membrane and inactivates the NDM-1 metallo-β-lactamase | Department of Pharmacology, School of Pharmacy, Fourth Military Medical University, Xi’an, | [98] |
| 2019 | Unravelling the Skin Secretion Peptides of the Gliding Leaf Frog, *Agalychnis spurrelli* (Hylidae) | Natural Drug Discovery Group, School of Pharmacy, Queen’s University, Belfast 97 Lisburn Road, Belfast BT9 7BL, Northern Ireland, | [99] |
| 2019 | De Novo Design and In Vitro Testing of Antimicrobial Peptides Against Gram-Negative Bacteria | Ivane Beritashvili Center of Experimental Biomedicine, 0160 Tbilisi, | [100] |
| 2019 | Microwave-assisted solid-phase synthesis of antisense acpP peptide nucleic acid-peptide conjugates active against colistin- and tigecycline-resistant E. coli and K. pneumoniae | department of drug design and paharmacology, faculty of health and medical sciences, university of copenhagen | [101] |
| 2019 | The activity and action mechanism of novel short selective LL‐37‐derived anticancer peptides against clinical isolates of *Escherichia coli* | Venom and Biotherapeutics Molecules Lab, Medical Biotechnology Department, Biotechnology Research Center, Pasteur Institute of Iran, Tehran | [102] |
| 2019 | Structural analysis and mode of action of BMAP-27, a cathelicidin-derived antimicrobial peptide | Department of Microbiology, Chosun University School of Medicine, Gwangju, 61452, | [103] |
| 2019 | Design, Recombinant Expression, and Antibacterial Activity of a Novel Hybrid Magainin-Thanatin Antimicrobial Peptide | a School of Food and Bioengineering , Shaanxi University of Science & Technology , Xi'an | [104] |
| 2019 | Expression, purification and characterization of a recombinant antimicrobial peptide Hispidalin in *Pichia pastoris* | State Key Laboratory of Food Nutrition and Safety, China International Scientific & Technological Cooperation Base for Health Biotechnology, College of Food Engineering and Biotechnology, Tianjin University of Science & Technology, Tianjin, 300457 | [105] |
| 2019 | Alignment‐based design and synthesis of new antimicrobial Aurein‐derived peptides with improved activity against Gram‐negative bacteria and evaluation of their toxicity on human cells | Drug Design and Bioinformatics Unit, Department of Medical Biotechnology, Biotechnology Research Center, Pasteur Institute of Iran, Tehran | [106] |
| 2019 | Design of Trp-Rich Dodecapeptides with Broad-SpectrumAntimicrobial Potency and Membrane-Disruptive Mechanism | Institute of Animal Nutrition, Northeast Agricultural University, Harbin, Heilongjiang 150030, | [107] |
| 2019 | Heterologous expression of Thrombocidin-1 in *Pichia pastoris*: Evaluation of its antibacterial and antioxidant activity | Department of Food Science and Technology, Faculty of Agriculture, Ferdowsi University of Mashhad, Mashhad | [108] |
| 2019 | Replacement of l-Amino Acids by d-Amino Acids in the Antimicrobial Peptide Ranalexin and Its Consequences for Antimicrobial Activity and Biodistribution | nstitute of Pharmacy and Molecular Biotechnology, Heidelberg University, 69120 Heidelberg | [109] |
| 2019 | Fish-derived antimicrobial peptides: Activity of a chionodracine mutant against bacterial models and human bacterial pathogens | Department for Innovation in Biological, Agrofood and Forest Systems, University of Tuscia, Viterbo | [110] |
| 2019 | Antimicrobial and anti-inflammatory activities of chemokine CXCL14-derived antimicrobial peptide and its analogs | Department of Cellular and Molecular Medicine, Chosun University, Gwangju 61452 | [111] |
| 2018 | Joker: An algorithm to insert patterns into sequences for designing antimicrobial peptides | S-Inova Biotech, Pós-graduação em Biotecnologia, Universidade Católica Dom Bosco, Campo Grande, MS, | [112] |
| 2018 | The Role of Outer Membrane Proteins and Lipopolysaccharides for the Sensitivity of *Escherichia coli* to Antimicrobial Peptides | National Food Institute, Technical University of Denmark, Kongens Lyngby, | [113] |
| 2018 | Identification and screening of potent antimicrobial peptides in arthropod genomes | Colby-Sawyer College, Department of Natural Science, New London, NH, | [114] |
| 2018 | [Prediction and characterization of a novel hemocyanin-derived antimicrobial peptide from shrimp Litopenaeus vannamei](https://link.springer.com/article/10.1007/s00726-018-2575-x) |  | [115] |
| 2018 | [Histone H5 is a potent Antimicrobial Agent and a template for novel Antimicrobial Peptides](https://www.nature.com/articles/s41598-018-20912-1) |  | [116] |
| 2018 | Antimicrobial Activity of Antimicrobial Peptide LPcin-YK3 Derived From Bovine Lactophoricin | Department of Chemistry, Hankuk University of Foreign Studies, Yong-In 17035 | [117] |
| 2018 | Expression in Escherichia Coli of Novel Recombinant Hybrid Antimicrobial Peptide AL32-P113 With Enhanced Antimicrobial Activity in Vitro | Division of Clinical Microbiology, Department of Medical Technology, Faculty of Associated Medical Sciences, Chiang Mai University, 50200 | [118] |
| 2018 | [Expression and Identification of an Antimicrobial Peptide VIP in Pichia Pastoris] | Lanzhou Lanshi Energy Equipment Engineering Institute CO., LTD, Lanzhou 730300, Gansu, | [119] |
| 2018 | Identification, Characterization, Immunolocalization, and Biological Activity of Lucilin Peptide | Center of Biomedical Research. Group of Molecular Immunology, Universidad del Quindío. Cra. 15 calle 12 norte. Armenia, Quindío, | [120] |
| 2018 | HJH-1, a Broad-Spectrum Antimicrobial Activity and Low Cytotoxicity Antimicrobial Peptide | College of Animal Science and Technology, Shihezi University, Shihezi 832003 | [121] |
| 2018 | Assessment of synergistic antibacterial activity of combined biosurfactants revealed by bacterial cell envelop damage | Department of Chemical Technology, University of Calcutta, Kolkata 700009, | [122] |
| 2018 | Synthesis and antibacterial bioactivities of cationic deacetyl linezolid amphiphiles | School of Pharmaceutical Sciences, Institute of Drug Discovery and Development, Key Laboratory of Advanced Pharmaceutical Technology, Ministry of Education of China, Zhengzhou University, Zhengzhou 450001 | [123] |
| 2018 | [Phospholipid composition of the outer membrane of Escherichia coli influences its susceptibility against antimicrobial peptide apidaecin 1b](https://www.sciencedirect.com/science/article/pii/S0732889317303632) | Centre of New Technologies, University of Warsaw, S. Banacha 2c, 02-097 Warsaw, | [124] |
| 2017 | Thaulin-1: The first antimicrobial peptide isolated from the skin of a Patagonian frog Pleurodema thaul (Anura: Leptodactylidae: Leiuperinae) with activity against Escherichia coli | PEEC – CONICET, Consejo Nacional de Investigaciones Científicas y Técnicas, Bvd. Brown 2915, Puerto Madryn, Argentina | [125] |
| 2017 | Antimicrobial peptide from mucus of Andrias davidianus: screening and purification by magnetic cell membrane separation technique | Shaanxi Key Laboratory of Biology and Bioresources, Shaanxi University of Technology, Chaoyang Road, Hanzhong, Shaanxi 723001, China | [126] |
| 2017 | Melittin and its potential in the destruction and inhibition of the biofilm formation by Staphylococcus aureus, Escherichia coli and Pseudomonas aeruginosa isolated from bovine milk | Laboratory of Virology and Immunology, Federal University of Federal de Pelotas, Pelotas, RS, Brazil | [127] |
| 2017 | Identification and molecular cloning of novel antimicrobial peptides from skin secretions of the Chinese bamboo leaf odorous frog (Odorrana versabilis) and the North American pickerel frog (Rana palustris) | School of Chinese Materia Medica, Beijing University of Chinese Medicine, Beijing 100102, China | [128] |
| 2017 | Characterization and antimicrobial evaluation of SpPR-AMP1, a proline-rich antimicrobial peptide from the mud crab Scylla paramamosain | Department of Food Technology, Faculty of Science, Chulalongkorn University, 254 Phayathai Road, Bangkok 10330, Thailand | [129] |
| 2017 | Complete de novo sequencing of antimicrobial peptides in the venom of the scorpion Isometrus maculatus | Graduate School of Agriculture, Kyoto University, Kyoto 606-8502, Japan | [130] |
| 2017 | Antimicrobial effects of novel peptides cOT2 and sOT2 derived from Crocodylus siamensis and Pelodiscus sinensis ovotransferrins | Department of Biochemistry, Faculty of Science, Khon Kaen University, Khon Kaen 40002, Thailand | [131] |
| 2017 | Antibacterial activity of novel peptide derived from Cry1Ab16 toxin and development of LbL films for foodborne pathogens control | REQUIMTE/LAQV, Instituto Superior de Engenharia do Porto, ISEP, Instituto Politécnico do Porto, Porto, Portugal | [132] |
| 2017 | Cathelicidin antimicrobial peptide from Alligator mississippiensis has antibacterial activity against multi-drug resistant Acinetobacter baumanii and Klebsiella pneumoniae | School of Systems Biology, George Mason University, Manassas, VA, USA | [133] |
| 2017 | LL-37-derived short antimicrobial peptide KR-12-a5 and its d-amino acid substituted analogs with cell selectivity, anti-biofilm activity, synergistic effect with conventional antibiotics, and anti-inflammatory activity | Department of Biomedical Science, Graduate School, Chosun University, Gwangju 501-759, Republic of Korea | [134] |
| 2017 | Isolation and characterisation of a novel antibacterial peptide from a native swine intestinal tract-derived bacterium | College of Animal Science and Technology, Northwest A&F University, 22 Xinong Road, Yangling, Shaanxi 712100, China | [135] |
| 2017 | A truncated Sph12-38 with potent antimicrobial activity showing resistance against bacterial challenge in Oryzias melastigma | State Key Laboratory of Marine Environmental Science, College of Ocean & Earth Science, Xiamen University, Xiamen, Fujian 361102, PR China | [136] |
| 2017 | Identification of the first cathelicidin gene from skin of Chinese giant salamanders Andrias davidianus with its potent antimicrobial activity | College of Animal Science and Technology, Northwest A&F University, Shaanxi Key Laboratory of Molecular Biology for Agriculture, Yangling, Shaanxi 712100, China | [137] |
| 2017 | Novel designed VmCT1 analogs with increased antimicrobial activity | Universidade Federal Do ABC, Centro de Ciências Naturais e Humanas, Santo André, SP, Brazil | [138] |
| 2017 | Bactericidal activity of fish galectin 4 derived membrane-binding peptide tagged with oligotryptophan | Division of Fisheries Biotechnology & Molecular Biology, Department of Biotechnology, Faculty of Science and Humanities, SRM University, Kattankulathur 603 203, Chennai, Tamil Nadu, India | [139] |
| 2017 | Novel human bioactive peptides identified in Apolipoprotein B: Evaluation of their therapeutic potential | Department of Chemical Sciences, University of Naples Federico II, 80126 Naples, Italy | [140] |
| 2017 | Identification and characterization of a β-defensin gene involved in the immune defense response of channel catfish, Ictalurus punctatus | Department of Aquaculture, College of Animal Science and Technology, Sichuan Agricultural University, Wenjiang District, Chengdu 611130, China | [141] |
| 2017 | Molecular characterization and functional analysis of the hepcidin gene from roughskin sculpin (Trachidermus fasciatus) | Ocean College, Shandong University (Weihai), Weihai 264209, China | [142] |
| 2017 | Identification, eukaryotic expression and structure & function characterizations of β-defensin like homologues from Pelodiscus sinensi | School of Life Science and Biotechnology, Dalian University of Technology, Dalian, Liaoning 116024, China | [143] |
| 2017 | Screening, Expression, Purification and Functional Characterization of Novel Antimicrobial Peptide Genes from Hermetia illucens (L.) | State Key Laboratory of Agricultural Microbiology, National Engineering Research Center of Microbial Pesticides, College of Life Science and Technology, Huazhong Agricultural University- Wuhan, China | [144] |
| 2017 | Molecular cloning and characterization of antimicrobial peptides from skin of Hylarana guentheri | Key Laboratory of Tropical Biological Resources, Ministry of Education, College of Marine Science, Hainan University, Haikou 570228, China | [145] |
| 2017 | Synergistic effects of antimicrobial peptide DP7 combined with antibiotics against multidrug-resistant bacteria | State Key Laboratory of Biotherapy/ Collaborative Innovation Center of Biotherapy, West China Hospital, Sichuan Universit | [146] |
| 2017 | Highly potent antimicrobial modified peptides derived from the Acinetobacter baumannii phage endolysin LysAB2 | Department of Laboratory Medicine and Biotechnology, Tzu Chi University, Hualien, Taiwan. | [147] |
| 2017 | High Specific Selectivity and Membrane-Active Mechanism of Synthetic Cationic Hybrid Antimicrobial Peptides Based on the Peptide FV7 | Institute of Animal Nutrition, Northeast Agricultural University, Harbin 150030, China | [148] |
| 2017 | Peptide Antibiotics Developed by Mimicking Natural Antimicrobial Peptides | Department of Bioengineering, Faculty of Chemistry and Metallurgy, Yildiz Technical University, Istanbul, Turkey | [149] |
| 2017 | Antimicrobial peptides sourced from post-butter processing waste yak milk protein hydrolysates | Shaanxi Key Laboratory of Biology and Bioresources, College of Bioscience and Bioengineering, Shaanxi University of Technology, Chaoyang Rd, Hanzhong 723001, Shaanxi, China | [150] |
| 2017 | D-form KLKLLLLLKLK-NH2 peptide exerts higher antimicrobial properties than its L-form counterpart via an association with bacterial cell wall components | Faculty of Pharmaceutical Sciences, Doshisha Women’s College, Kyotanabe, Kyoto 610-0395, Japan | [151] |
| 2017 | Characterization of two novel antimicrobial peptides from the cuticular extracts of the ant Trichomyrmex criniceps (Mayr), (Hymenoptera: Formicidae) | Department of Applied Zoology, School of Biological Sciences, Kuvempu University, Shankaraghatta, Shivamogga, Karnataka, India | [152] |
| 2017 | Short Antimicrobial Peptides Exhibiting Antibacterial and Anti‐Inflammatory Activities Derived from the N‐Terminal Helix of Papiliocin | Department of Bioscience and Biotechnology, Konkuk University, Seoul 143-701, Korea | [153] |
| 2017 | Retro analog concept: comparative study on physico-chemical and biological properties of selected antimicrobial peptides | Faculty of Pharmacy, Medical University of Gdańsk, Gdańsk, Poland | [154] |
| 2017 | Genomewide Analysis of the Antimicrobial Peptides in Python bivittatus and Characterization of Cathelicidins with Potent Antimicrobial Activity and Low Cytotoxicity | Department of Stem Cell and Regenerative Biotechnology, Konkuk University, Seoul, South Korea | [155] |
| 2017 | The rumen microbiome: an underexplored resource for novel antimicrobial discovery | Institute of Biological Environmental and Rural Sciences, Aberystwyth University, Aberystwyth, Wales | [156] |
| 2017 | Computational antimicrobial peptide design and evaluation against multidrug-resistant clinical isolates of bacteria | Departments of Biochemistry and Computational and Data Sciences, Molecular Biophysics Unit, Department of Microbiology and Cell Biology, and Centre for Biosystems Science and Engineering, Indian Institute of Science, Bangalore, India | [157] |
| 2017 | PSN-PC: A Novel Antimicrobial and Anti-Biofilm Peptide from the Skin Secretion of Phyllomedusa-camba with Cytotoxicity on Human Lung Cancer Cell | School of Pharmacy, Nanjing University of Chinese Medicine, Nanjing 210000, China | [158] |
| 2017 | Antibacterial and detoxifying activity of NZ17074 analogues with multi-layers of selective antimicrobial actions against Escherichia coli and Salmonella enteritidis | Key Laboratory of Feed Biotechnology, Ministry of Agriculture, Beijing, 100081, China | [159] |
| 2017 | D-Cateslytin, a new antimicrobial peptide with therapeutic potential | Université de Strasbourg, Faculté de Chirurgie Dentaire, 3 rue Sainte Elisabeth, 67000, Strasbourg, France | [160] |
| 2017 | Cloning and functional identification of moricins from the diamondback moth, Plutella xylostella (L.) | State Key Laboratory of Ecological Pest Control for Fujian and Taiwan Crops, Fujian Agriculture and Forestry, University, Fuzhou, China | [161] |
| 2017 | Cytotoxic peptides with insulin‐releasing activities from skin secretions of the Italian stream frog Rana italica (Ranidae) | SAAD Centre for Pharmacy and Diabetes, School of Biomedical Sciences, University of Ulster, Coleraine BT52 1SA, UK | [162] |
| 2017 | Antimicrobial Activity of Truncated and Polyvalent Peptides Derived from the FKCRRWQWRMKKGLA Sequence against Escherichia coli ATCC 25922 and Staphylococcus aureus ATCC 25923 | Chemistry Department, Universidad Nacional de Colombia, Bogotá Carrera 45 No. 26-85, Building 451, Office 409, Laboratory 334, Bogotá 11321, Colombia | [163] |
| 2017 | Design, Recombinant Fusion Expression and Biological Evaluation of Vasoactive Intestinal Peptide Analogue as Novel Antimicrobial Agent | The Key Laboratory for Space Bioscience and Biotechnology, School of Life Sciences, Northwestern Polytechnical University, Xi’an 710072, China | [164] |
| 2017 | Novel antimicrobial peptide CPF‐C1 analogs with superior stabilities and activities against multidrug‐resistant bacteria | School of Pharmaceutical Sciences, Sun School of Pharmaceutical Sciences, Sun Yat-sen University, Guangzhou, China | [165] |
| 2017 | Production of Recombinant Antimicrobial Polymeric Protein Beta Casein-E 50-52 and Its Antimicrobial Synergistic Effects Assessment with Thymol | Agriculture and Natural Resources Biotechnology Department, University of Tehran, Karaj 31587-11167, Iran | [166] |
| 2017 | Improved strategy for recombinant production and purification of antimicrobial peptide tachyplesin I and its analogs with high cell selectivity | Shemyakin and Ovchinnikov Institute of Bioorganic Chemistry, Russian Academy of Sciences, Moscow, Russia | [167] |
| 2017 | C‐Terminal Modification and Multimerization Increase the Efficacy of a Proline‐Rich Antimicrobial Peptide | The Florey Institute of Neuroscience and Mental Health, University of Melbourne, Australia | [168] |
| 2017 | Thaulin-1: The first antimicrobial peptide isolated from the skin of a Patagonian frog Pleurodema thaul (Anura: Leptodactylidae: Leiuperinae) with activity against Escherichia coli | IPEEC – CONICET, Consejo Nacional de Investigaciones Científicas y Técnicas, Bvd. Brown 2915, Puerto Madryn, Argentina | [125] |
| 2017 | Design of novel antimicrobial peptide dimer analogues with enhanced antimicrobial activity in vitro and in vivo by intermolecular triazole bridge strategy | Key Laboratory of Preclinical Study for New Drugs of Gansu Province, School of Basic Medical Sciences, Lanzhou University, Lanzhou 730000, China | [169] |
| 2017 | Combined Systems Approaches Reveal a Multistage Mode of Action of a Marine Antimicrobial Peptide against Pathogenic Escherichia coli and Its Protective Effect against Bacterial Peritonitis and Endotoxemia | Key Laboratory of Feed Biotechnology, Ministry of Agriculture, Beijing, China | [170] |
| 2016 | Inhibitory effects of a novel antimicrobial peptide from kefir against Escherichia coli | College of Food Science, South China Agricultural University, Guangzhou, 510642, PR China | [171] |
| 2016 | Two novel antimicrobial peptides from skin venoms of spadefoot toad Megophrys minor | School of Pharmaceutical Science and Yunnan Key Laboratory of Pharmacology for Natural Products, Kunming Medical University, Kunming, Yunnan 650500, China; | [172] |
| 2016 | Peptidomic approach identifies cruzioseptins, a new family of potent antimicrobial peptides in the splendid leaf frog, Cruziohyla calcarifer | Natural Drug Discovery Group, School of Pharmacy, Queen's University Belfast, 97 Lisburn Road, BT9 7BL Belfast, Northern Ireland, UK | [173] |
| 2016 | Short, multiple-stranded β-hairpin peptides have antimicrobial potency with high selectivity and salt resistance | Laboratory of Molecular Nutrition and Immunity, The Institute of Animal Nutrition, Northeast Agricultural University, Harbin, PR China | [174] |
| 2016 | Antimicrobial and host cell-directed activities of Gly/Ser-rich peptides from salmonid cathelicidins | Department of Life Sciences, University of Trieste, Via Giorgieri 5, 34127 Trieste, Italy | [175] |
| 2016 | A novel defensin-like antimicrobial peptide from the skin secretions of the tree frog, Theloderma kwangsiensis | College of Life Sciences, Nanjing Agricultural University, 1st Weigang, Nanjing, Jiangsu 210095, China | [176] |
| 2016 | Characterisation of three alpha-helical antimicrobial peptides from the venom of Scorpio maurus palmatus | Biomedical Research Centre, Biosciences Division, Sheffield Hallam University, Sheffield, UK | [177] |
| 2016 | Isolation, purification and characterization of antimicrobial protein from seedlings of Bauhinia purpurea L. | Centre for Advanced Studies in Botany, University of Madras, Guindy Campus, Chennai, Tamil Nadu 600 025, India | [178] |
| 2016 | A specific antimicrobial protein CAP-1 from Pseudomonas sp. isolated from the jellyfish Cyanea capillata | Marine Bio-pharmaceutical Institute, Second Military Medical University, Shanghai 200433, China | [179] |
| 2016 | Characterization of a type-I crustin with broad-spectrum antimicrobial activity from red swamp crayfish Procambarus clarkii | Shandong Provincial Key Laboratory of Animal Cells and Developmental Biology, School of Life Sciences, Shandong University, Jinan, Shandong 250100, China | [180] |
| 2016 | Isolation and identification of some antibacterial peptides in the plasmin-digest of β-casein | Department of Food Science and Technology, College of Food Science and Technology, Science and Research Branch, Islamic Azad University, Tehran, Iran | [181] |
| 2016 | Two hepcidins from spotted scat (Scatophagus argus) possess antibacterial and antiviral functions in vitro | Key Laboratory of Exploration and Utilization of Aquatic Genetic Resources, Ministry of Education, Shanghai Ocean University, Shanghai 201306, China | [182] |
| 2016 | Purification, characterization and mode of action of plantaricin K25 produced by Lactobacillus plantarum | Microbiology Division, Institute of Biological Sciences, Faculty of Science, University of Malaya, 50603, Kuala Lumpur, Malaysia | [183] |
| 2016 | Isolation, structural and functional characterization of a new Lys49 phospholipase A2 homologue from Bothrops neuwiedi urutu with bactericidal potential | Centro de Estudos de Biomoléculas Aplicadas à Saúde, CEBio, Fundação Oswaldo Cruz, FIOCRUZ, Fiocruz Rondônia, and Departamento de Medicina, Universidade Federal de Rondônia, UNIR, Porto Velho-RO, Brazil | [184] |
| 2016 | De Novo Transcriptome Analysis and Detection of Antimicrobial Peptides of the American Cockroach Periplaneta americana (Linnaeus) | Department of Agricultural Biology, National Institute of Agricultural Sciences, Rural Development Administration, Wanju, Republic of Korea, 2 Insilicogen, Inc., Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea, 3 College of Agriculture & Life Sciences, Chonnam National University, Gwangju, Republic of Korea | [185] |
| 2016 | Antimicrobial activity and safety evaluation of peptides isolated from the hemoglobin of chickens | Department of Veterinary Pathology and Public Health, Key Laboratory of Zoonosis of Ministry of Agriculture College of Veterinary Medicine, China Agricultural University, Beijing 100193, China | [186] |
| 2016 | Antimicrobial Activity and Stability of Short and Long Based Arachnid Synthetic Peptides in the Presence of Commercial Antibiotics | Departamento de Medicina Molecular y Bioprocesos, Instituto de Biotecnología, Universidad Nacional Autónoma de México, UNAM. Apartado Postal 510-3, Cuernavaca, Morelos 62250, Mexico | [187] |
| 2016 | Antimicrobial activity, improved cell selectivity and mode of action of short PMAP-36-derived peptides against bacteria and Candida | Laboratory of Molecular Nutrition and Immunity, Institute of Animal Nutrition, Northeast Agricultural University, Harbin, Heilongjiang, P.R. China | [188] |
| 2016 | Rapid Screening of Antimicrobial Synthetic Peptides | Department of Inorganic Chemistry, Faculty of Pharmacy, Medical University of Gdansk, Al. Gen. J. Hallera 107, 80-416 Gdan´sk, Poland | [189] |
| 2016 | The C‐terminal sequences of porcine thrombin are active as antimicrobial peptides | Institute of Animal Nutrition, Northeast Agricultural University, Harbin, P R China | [190] |
| 2016 | Novel Antimicrobial Peptides EeCentrocins 1, 2 and EeStrongylocin 2 from the Edible Sea Urchin Echinus esculentus Have 6-Br-Trp Post-Translational Modifications | The Norwegian College of Fishery Science, Faculty of Biosciences, Fisheries and Economics, UiT The Arctic University of Norway, Tromsø, Norway | [191] |
| 2016 | Modification and characterization of a new recombinant marine antimicrobial peptide N2 | Institute of Animal Nutrition, Northeast Agricultural University, Harbin 150030, China | [192] |
| 2016 | Peptides from American alligator plasma are antimicrobial against multi-drug resistant bacterial pathogens including Acinetobacter baumannii | School of Systems Biology, George Mason University, Manassas, VA, USA | [193] |
| 2016 | The Spider Venom Peptide Lycosin-II Has Potent Antimicrobial Activity against Clinically Isolated Bacteria | Department of Medical Genetics, 2nd XiangYa Hospital of Central South University, Changsha 410011, China | [194] |
| 2016 | Immunomodulatory and Anti-Inflammatory Activities of Chicken Cathelicidin-2 Derived Peptides | Division of Molecular Host Defence, Department of Infectious Diseases and Immunology, Faculty of Veterinary Medicine, Utrecht University, Utrecht, The Netherlands, | [195] |
| 2016 | Salt‐resistant short antimicrobial peptides | School of Biological Sciences, Nanyang Technological University, 60 Nanyang Drive, Singapore | [196] |
| 2016 | Discovery of Novel Bacterial Cell-Penetrating Phylloseptins in Defensive Skin Secretions of the South American Hylid Frogs, Phyllomedusaduellmani and Phyllomedusa coelestis | Natural Drug Discovery Group, School of Pharmacy, Queen’s University, Belfast BT9 7BL, Northern Ireland, UK | [197] |
| 2016 | Effective Design of Multifunctional Peptides by Combining Compatible Functions | Department of Biochemistry and Structural Biology, Institute of Cellular Physiology, Universidad Nacional Autónoma de México, Mexico City, Mexico | [198] |
| 2016 | Novel Hybrid Peptide Cecropin A (1–8)-LL37 (17–30) with Potential Antibacterial Activity | Laboratory of Feed Biotechnology, State Key Laboratory of Animal Nutrition, College of Animal Science and Technology, China Agricultural University, Beijing 100193, China | [199] |
| 2016 | RV-23, a Melittin-Related Peptide with Cell-Selective Antibacterial Activity and High Hemocompatibility | Department of Tissue Engineering, Institute of Transfusion Medicine, Beijing, China | [200] |
| 2016 | Antimicrobial Peptide CMA3 Derived from the CA-MA Hybrid Peptide: Antibacterial and Anti-inflammatory Activities with Low Cytotoxicity and Mechanism of Action in Escherichia coli | Research Center for Proteinaceous Materials (RCPM), Chosun University, Gwangju, Republic of Korea | [201] |
| 2016 | Structural and functional evaluation of the palindromic alanine-rich antimicrobial peptide Pa-MAP2 | Centro de Análises Proteômicas e Bioquímicas, Programa de Pós-Graduação em Ciências Genômicas e Biotecnologia, UCB, Brasília, DF, Brazil | [202] |
| 2016 | Small Peptides Derived from Penetratin as Antibacterial Agents | Departamento de Quimica, Facultad de Quimica, Bioquimica y Farmacia, Universidad Nacional de San Luis, San Luis, Argentina | [203] |
| 2016 | The effects of LPS on the activity of Trp-containing antimicrobial peptides against Gram-negative bacteria and endotoxin neutralization | Faculty of Life Science, Liaoning Normal University, Dalian 116081, China | [204] |
| 2016 | The Disulfide Bond of the Peptide Thanatin Is Dispensible for Its Antimicrobial Activity In Vivo and In Vitro | Department of Pharmacology, School of Pharmacy, Fourth Military Medical University, Xi’an, China | [205] |
| 2016 | Novel haemoglobin‐derived antimicrobial peptides from chicken (Gallus gallus) blood: purification, structural aspects and biological activity | Institute of Cellular and Intracellular Symbiosis, RAS, Orenburg, Russia | [206] |
| 2016 | Antibacterial activity and modes of action of phosvitin-derived peptide Pt5e against clinical multi-drug resistance bacteria | Laboratory for Evolution & Development, Institute of Evolution & Marine Biodiversity and Department of Marine Biology, Ocean University of China, Qingdao 266003, China | [207] |
| 2016 | Experimental Induction of Bacterial Resistance to the Antimicrobial Peptide Tachyplesin I and Investigation of the Resistance Mechanisms | College of Life Science and Engineering, Henan University of Urban Construction, Ping Dingshan, People’s Republic of China | [208] |
| 2016 | Two Novel Dermaseptin-Like Antimicrobial Peptides with Anticancer Activities from the Skin Secretion of Pachymedusa dacnicolor | Natural Drug Discovery Group, School of Pharmacy, Queen’s University, Belfast BT9 7BL, Northern Ireland, UK | [209] |
| 2016 | Selective amino acid substitution reduces cytotoxicity of the antimicrobial peptide mastoparan | Molecular Pathology Post-graduate Program, University of Brasília, Brasília, Distrito Federal, Brazil | [210] |

**Supplementary Table 10:** **Studies included in this meta-analysis.** Table 11 specifically includes studies with antibacterial peptidomimetic data.

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Title** | **Lab Group** | **Reference** |
| 2020 | Bacterial Aggregation Triggered by Fibril Forming Tryptophan-Rich Sequences: Effects of Peptide Side Chain and Membrane Phospholipids | Peptide Chemistry Laboratory, Institute ofBiochemistry and Biophysics, University of Tehran, 14176-14335 Tehran, | [211] |
| 2020 | Chain-End Modifications and Sequence Arrangements of Antimicrobial Peptoids for Mediating Activity and Nano-Assembly | Department of Pure and Applied Chemistry, University of Strathclyde, Glasgow | [212] |
| 2020 | Evaluation of Peptoid Mimics of Short, Lipophilic Peptide Antimicrobials | Middle Tennessee State University, Department of Chemistry, 1301 E. Main St. | [213] |
| 2020 | Crown ether modified peptides: Length and crown ring size impact on membrane interactions | Département de Chimie and PROTEO, Université Laval, 1045 avenue de la Médecine, Québec G1V 0A6 | [214] |
| 2020 | Rationally designed antimicrobial peptides: Insight into the mechanism of eleven residue peptides against microbial infections | Department of Chemistry, Indian Institute of Technology, Guwahati, Guwahati, | [215] |
| 2020 | Antibacterial activity of lipo-α/sulfono-γ-AA hybrid peptides | Department of Chemistry, University of South Florida, 4202 E. Fowler Ave, Tampa, FL, 33620 | [216] |
| 2020 | Synthesis of fmoc-triazine amino acids and its application in the synthesis of short antibacterial peptidomimetics | Division of Magnetic Resonance, Korea Basic Science Institute (KBSI), Ochang 28119 | [217] |
| 2020 | Synthesis, antibacterial and anticancer activity, and docking study of aminoguanidines containing an alkynyl moiety |  | [218] |
| 2020 | Conversion of Broad-Spectrum Antimicrobial Peptides into Species-Specific Antimicrobials Capable of Precisely Targeting Pathogenic Bacteria | Institute of Animal Nutrition, Northeast Agricultural University, 600 Changjiang Road, Harbin | [219] |
| 2020 | Dilipid Ultrashort Tetrabasic Peptidomimetics Potentiate Novobiocin and Rifampicin Against Multidrug-Resistant Gram-Negative Bacteria | Department of Chemistry, Faculty of Science, University of Manitoba, 144 Dysart Road, Winnipeg, Manitoba R3T 2N2 | [220] |
| 2020 | Alternating Cationic‐Hydrophobic Peptide/Peptoid Hybrids: Influence of Hydrophobicity on Antibacterial Activity and Cell Selectivity | Department of Drug Design and Pharmacology, University of Copenhagen, Jagtvej 162, 2100 Copenhagen, Denmark | [35] |
| 2020 | Isomannide monoundecenoate‐based 1,2,3‐triazoles: Design, synthesis, and in vitro bioactive evaluation | Centre for Lipid Science & Technology, CSIR‐Indian Institute of Chemical Technology, Hyderabad, India | [221] |
| 2020 | Antimicrobial and antitumor activity of peptidomimetics synthesized from amino acids | Key Laboratory of Superlight Materials & Surface Technology, Ministry of Education, Institute of Advanced Marine Materials, College of Materials Science and Chemical Engineering, Harbin Engineering University, Harbin 150001, China | [222] |
| 2019 | Fast and potent bactericidal membrane lytic activity of PaDBS1R1, a novel cationic antimicrobial peptide | Programa de Pós-graduação em Patologia Molecular, Universidade de Brasília, Brasília, DF 70910-9 | [223] |
| 2019 | Repurposing Azithromycin and Rifampicin Against Gram-Negative Pathogens by Combination With Peptidomimetics | Department of Veterinary and Animal Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Frederiksberg | [224] |
| 2019 | Peptide/Peptoid Hybrid Oligomers: The Influence ofHydrophobicity and Relative Side-Chain Length onAntibacterial Activity and Cell Selectivity | Department of Drug Design and Pharmacology, Faculty of Health and Medical Sciences, University of Copenhagen, Jagtvej 162, DK-2100 Copenhagen | [225] |
| 2019 | Cationic biaryl 1,2,3-triazolyl peptidomimetic amphiphiles: synthesis, antibacterial evaluation and preliminary mechanism of action studies | School of Chemistry and Molecular Bioscience, University of Wollongong, Wollongong, NSW, 2522, | [226] |
| 2019 | Short Cationic Peptidomimetic Antimicrobials | School of Chemistry, University of New South Wales, Sydney, NSW 2052 | [31] |
| 2019 | Chimeric peptidomimetic antibiotics against Gram-negative bacteria | Chemistry Department, University of Zurich, Zurich | [227] |
| 2019 | Novel antibiotics effective against gram-positive and -negative multi-resistant bacteria with limited resistance | University of Rennes, Inserm, BRM [Bacterial Regulatory RNAs and Medicine] UMR\_S 1230, Rue du Professeur Léon Bernard | [228] |
| 2019 | Antibiotic-Based Conjugates Containing Antimicrobial HLopt2Peptide: Design, Synthesis, Antimicrobial and Cytotoxic Activities | Department of Molecular Biochemistry, Faculty of Chemistry, University of Gdańsk, Wita Stwosza 63, 80-308 Gdańsk, | [229] |
| 2019 | Design, antimicrobial activity and mechanism of action of Arg-rich ultra-short cationic lipopeptides | Department of Life Sciences, University of Trieste, Trieste, | [230] |
| 2019 | Antimicrobial activity of amphipathic α,α-disubstituted β-amino amide derivatives against ESBL – CARBA producing multi-resistant bacteria; effect of halogenation, lipophilicity and cationic character | Department of Pharmacy, Faculty of Health Sciences, UiT – The Arctic University of Norway, NO-9037, Tromsø, | [231] |
| 2019 | Discovery of potent and selective inhibitors of the *Escherichia coli* M1-aminopeptidase *via* multicomponent solid-phase synthesis of tetrazole-peptidomimetics |  | [232] |
| 2019 | Antimicrobial activity, membrane interaction and stability of the D-amino acid substituted analogs of antimicrobial peptide W3R6 | Department of Respiratory Medicine, Beijing Hospital, Beijing 100730 | [233] |
| 2019 | Sequence and Dispersity Are Determinants of PhotodynamicAntibacterial Activity Exerted by Peptidomimetic Oligo(thiophene)s | Materials Science and Engineering, Rensselaer Polytechnic Institute, Troy, New York 12054 | [234] |
| 2019 | Modification of narrow‐spectrum peptidomimetic polyurethanes with fatty acid chains confers broad‐spectrum antibacterial activity | Department of Polymer Science, The University of Akron, Akron, OH | [235] |
| 2019 | Short, symmetric-helical peptides have narrow-spectrum activity with low resistance potential andhigh selectivity | Laboratory of Molecular Nutrition and Immunity, The Institute of Animal Nutrition,Northeast Agricultural University, Harbin, | [236] |
| 2019 | Topological effects on the designability and bactericidal potency of antimicrobial peptides | Molecular Informatics & Design Laboratory, Biosciences & Bioengineering, Indian Institute of Technology Guwahati, Assam 781039, | [237] |
| 2019 | Antibacterial mechanisms of GN‐2 derived peptides and peptoids against *Escherichia coli* | Department of Science and Environment, Roskilde University, Roskilde, | [238] |
| 2019 | Repurposing azithromycin and rifampicin against Gram-negative pathogens by combination with peptide potentiators | Department of Veterinary and Animal Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Frederiksberg, Denmark | [8] |
| 2018 | Norbornane-based cationic antimicrobial peptidomimetics targeting the bacterial membrane | Cancer Research Institute, School of Pharmacy and Medical Sciences, University of South Australia, Adelaide, SA, 5000, Australia | [239] |
| 2018 | Design and synthesis of cell selective α/β-diastereomeric peptidomimetic with potent *in vivo* antibacterial activity against methicillin resistant *S. Aureus* | CSIR-Institute of Genomics and Integrative Biology, Mall Road Delhi 110007, India; Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Jamia Hamdard (Hamdard University) New Delhi 110062, India. | [28] |
| 2018 | Synthesis and antimicrobial activity of amino acid and peptide derivatives of mycophenolic acid | Department of Organic Chemistry, Gdansk University of Technology, ul. G. Narutowicza 11/12, 80-233 Gdansk, Poland | [240] |
| 2018 | Synthesis and bioactivities study of new antibacterial peptide mimics: The dialkyl cationic amphiphiles | School of Pharmaceutical Sciences, Institute of Drug Discovery and Development, Key Laboratory of Advanced Pharmaceutical Technology, Ministry of Education of China, Zhengzhou University, Zhengzhou 450001, PR China; Collaborative Innovation Center of New Drug Research and Safety Evaluation, Henan Province, Zhengzhou 450001, PR China | [241] |
| 2018 | Lipopeptidomimetics derived from teixobactin have potent antibacterial activity against Staphylococcus aureus | Department of Chemistry, University of Leicester, University Road, LE1 7RH, UK | [242] |
| 2018 | Amphipathic sulfonamidobenzamides mimicking small antimicrobial marine natural products; investigation of antibacterial and anti-biofilm activity against antibiotic resistant clinical isolates | Department of Pharmacy, Faculty of Health Sciences, UiT – The Arctic University of Norway, NO-9037 Tromsø, Norway | [243] |
| 2018 | Short Proline-Rich Lipopeptide Potentiates Minocycline and Rifampin against Multidrug- and Extensively Drug-Resistant Pseudomonas aeruginosa | Department of Chemistry, University of Manitoba, Winnipeg, Manitoba, Canada. | [244] |
| 2017 | Methyl propiolate and 3-butynone: Starting points for synthesis of amphiphilic 1,2,3-triazole peptidomimetics for antimicrobial evaluation | Department of Chemistry, Norwegian University of Science and Technology (NTNU), NO-7491 Trondheim, Norway | [245] |
| 2017 | Effective antimicrobial activity of a peptide mutant Cbf-14-2 against penicillin-resistant bacteria based on its unnatural amino acids | State Key Laboratory of Natural Medicines, School of Life Science and Technology, China Pharmaceutical University, Nanjing, Jiangsu 210009, PR China | [246] |
| 2017 | Selective phenylalanine to proline substitution for improved antimicrobial and anticancer activities of peptides designed on phenylalanine heptad repeat | Molecular and Structural Biology Division, CSIR-Central Drug Research Institute, Sector 10, Jankipuram Extension, Sitapur Road, Lucknow 226 031, India | [247] |
| 2017 | Self-assembled cationic amphiphiles as antimicrobial peptides mimics: Role of hydrophobicity, linkage type, and assembly state | Department of Chemistry and Chemical Biology, Rutgers University, Piscataway, NJ, USA | [248] |
| 2017 | Synthetic Peptides Derived from Bovine Lactoferricin Exhibit Antimicrobial Activity against E. coli ATCC 11775, S. maltophilia ATCC 13636 and S. enteritidis ATCC 13076 | Chemistry Department, Universidad Nacional de Colombia, Bogotá Carrera 45 No 26-85, Building 451, office 409, Bogotá 11321, Colombia | [249] |
| 2017 | Peptoids successfully inhibit the growth of gram negative E. coli causing substantial membrane damage | Department of Science and Environment, Roskilde University, Universitetsvej 1, Postboks 260,4000 Roskilde, Denmark | [30] |
| 2017 | Effect of side chain hydrophobicity and cationic charge on antimicrobial activity and cytotoxicity of helical peptoids | Department of Global Medical Science, Sungshin University, Seoul 01133, Republic of Korea | [29] |
| 2017 | Lysine‐Based α‐Peptide/β‐Peptoid Peptidomimetics: Influence of Hydrophobicity, Fluorination, and Distribution of Cationic Charge on Antimicrobial Activity and Cytotoxicity | Department of Drug Design and Pharmacology, Faculty of Health and Medical Sciences, University of Copenhagen, Universitetsparken 2, 2100 Copenhagen, Denmark | [27] |
| 2016 | Improved in vitro evaluation of novel antimicrobials: potential synergy between human plasma and antibacterialpeptidomimetics, AMPs and antibiotics against human pathogenic bacteria | Department of Systems Biology, Matematiktorvet, Technical University of Denmark, 2800 Kgs Lyngby, Denmark | [26] |
| 2016 | Synthesis and antimicrobial activity of small cationic amphipathic aminobenzamide marine natural product mimics and evaluation of relevance against clinical isolates including ESBL–CARBA producing multi-resistant bacteria | Department of Pharmacy, Faculty of Health Sciences, UiT – The Arctic University of Norway, NO-9037 Tromsø, Norway | [250] |
| 2016 | In Vivo, In Vitro, and In Silico Characterization of Peptoids as Antimicrobial Agents | Department of Chemical and Biological Engineering, Northwestern University, 2145 Sheridan Road, E136, Evanston, IL, 60208, United States of America | [251] |
| 2016 | Development of a novel antimicrobial peptide AWRK6 | Department of Physiology, McGill University, Montreal, Canada | [252] |

**Supplementary Table 11: Significance of charge density.** The overall charge density has a significant effect on the minimum inhibitory concentration of the peptide (p<0.001).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type III Tests of Fixed Effectsa | | | | |
| Source | Numerator df | Denominator df | F | Sig. |
| Intercept | 1 | 248.464 | 656.522 | 0.000 |
| Charge density | 1 | 558.114 | 19.366 | <.0001 |

1. Dependent Variable: LogMIC.

**Supplementary Table 12: Significance of charge density vs length (0-15 amino acids).** The overall charge density has a significant effect on the minimum inhibitory concentration of the peptide (p=0.038).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type III Tests of Fixed Effectsa | | | | |
| Source | Numerator df | Denominator df | F | Sig. |
| Intercept | 1 | 78.132 | 305.491 | .000 |
| 0-15 (aa) | 1 | 125.699 | 4.393 | .038 |

1. Dependent Variable: LogMIC.

**Supplementary Table 13: Significance of charge density vs length (16-30 amino acids).** The overall charge density has a significant effect on the minimum inhibitory concentration of the peptide (p=0.011).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type III Tests of Fixed Effectsa | | | | |
| Source | Numerator df | Denominator df | F | Sig. |
| Intercept | 1 | 164.039 | 246.662 | .000 |
| 16-30 | 1 | 379.935 | 6.449 | .011 |

1. Dependent Variable: LogMIC.

**Supplementary Table 14: Significance of charge density vs length (31-45 amino acids).** The overall charge density has a significant effect on the minimum inhibitory concentration of the peptide (p<0.0001).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type III Tests of Fixed Effectsa | | | | |
| Source | Numerator df | Denominator df | F | Sig. |
| Intercept | 1 | 41.212 | 200.855 | .000 |
| 31-45 | 1 | 148.994 | 99.105 | <.0001 |

a. Dependent Variable: LogMIC.

**Supplementary Table 15: Estimates of Fixed Effects. Further investigation on charge density of minimum inhibitory concentration values.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Estimates of Fixed Effectsa | | | | | | | |
| Parameter | Estimate | Std. Error | df | t | Sig. | 95% Confidence Interval | |
| Lower Bound | Upper Bound |
| Intercept | 1.429662 | .059859 | 186.886 | 23.884 | .000 | 1.311575 | 1.547748 |
| Chargedensity | -.437852 | .099496 | 558.114 | -4.401 | .000 | -.633285 | -.242419 |
| a. Dependent Variable: LogMIC. | | | | | | | |

**Supplementary Table 16: Estimates of Fixed Effects. Further investigation on charge density against 0-15 amino acid (aa) in length of minimum inhibitory concentration values.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Estimates of Fixed Effectsa** | | | | | | | |
| Parameter | Estimate | Std. Error | df | t | Sig. | 95% Confidence Interval | |
| Lower Bound | Upper Bound |
| Intercept | 1.422201 | .081370 | 78.132 | 17.478 | .000 | 1.260211 | 1.584191 |
| Chargedensity | -.263094 | .125528 | 125.699 | -2.096 | .038 | -.511517 | -.014671 |
| a. Dependent Variable: LogMIC. | | | | | | | |

**Supplementary Table 17: Estimates of Fixed Effects. Further investigation on charge density against 16-30 amino acid (aa) in length of minimum inhibitory concentration values.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Estimates of Fixed Effectsa** | | | | | | | |
| Parameter | Estimate | Std. Error | df | t | Sig. | 95% Confidence Interval | |
| Lower Bound | Upper Bound |
| Intercept | 1.389309 | .088460 | 164.039 | 15.705 | .000 | 1.214642 | 1.563977 |
| Chargedensity | -.453381 | .178533 | 379.935 | -2.539 | .011 | -.804418 | -.102343 |
| a. Dependent Variable: LogMIC. | | | | | | | |

**Supplementary Table 18: Estimates of Fixed Effects. Further investigation on charge density against 31-45 amino acid (aa) in length of minimum inhibitory concentration values.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Estimates of Fixed Effectsa** | | | | | | | |
| Parameter | Estimate | Std. Error | df | t | Sig. | 95% Confidence Interval | |
| Lower Bound | Upper Bound |
| Intercept | 2.331933 | .164541 | 41.212 | 14.172 | .000 | 1.999687 | 2.664179 |
| Chargedensity | -4.647510 | .466846 | 148.994 | -9.955 | .000 | -5.570004 | -3.725017 |
| a. Dependent Variable: LogMIC. | | | | | | | |