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عنوان مقاله:

Antimicrobial Peptide Prediction using Multiple Encoding Techniques

محل انتشار:

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خلاصه مقاله:

Antimicrobial resistance presents a formidable global health challenge, driven by factors such as the misuse of antibacterial agents and the evolution of resistant pathogens. This crisis has led to soaring healthcare costs and a need for innovative solutions. Antimicrobial peptides, a diverse group of short amino acid chains, have emerged as promising alternatives to conventional antibiotics. Leveraging machine learning algorithms in the identification and characterization of these peptides has expedited the discovery process, reducing the reliance on time-consuming experiments. This paper introduces a novel approach to AMP classification, consolidating multiple encoding techniques into a unified dataset. Four encoding methods, including amino acid composition, pseudo amino acid composition, physicochemical properties, and Fourier transformation, are employed to enhance the feature sets. Four diverse classifiers, including Logistic Regression, Random Forest, Decision Tree, and Gaussian Naïve Bayes contribute to the classification process. The Matthews Correlation Coefficient is used to evaluate classification performance. The results of this research demonstrate that by unifying diverse encodings, it advances AMP classification accuracy and has the potential to transform the field of antimicrobial peptide research.

کلمات کلیدی:

Antimicrobial resistance, antimicrobial peptides, encodings.

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