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Resumo	<p>The alarming increase in antimicrobial resistance in the last decades has prompted the search for alternatives to control infectious diseases. Antimicrobial peptides (AMPs) represent a heterogeneous class of molecules with ample antibacterial, antiviral, and antifungal effects. They can be found in many organisms, including all classes of vertebrates, providing a valuable source of new antimicrobial agents. The unique properties of AMPs make it harder for microbes develop resistance, while their immunomodulatory properties and target diversity reinforce their translational use in multiple diseases, from autoimmune disorders to different types of cancer. The latest years have witnessed a vast number of studies evaluating the use of AMPs in therapy, with many progressing to clinical trials. The present review explores the recent developments in the medicinal properties of cathelicidins, a vast family of AMPs with potent antimicrobial and immunomodulatory effects. Cathelicidins from several organisms have been tested in disease models of viral and bacterial infections, inflammatory diseases, and tumors, with encouraging results. Combining nanomaterials with active, natural antimicrobial peptides, including LL-37 and synthetic analogs like ceragenins, leads to the creation of innovative nanoagents with significant clinical promise. However, there are still important limitations, such as the toxicity of many cathelicidins to healthy host cells and low stability in vivo. The recent advances in nanomaterials and synthetic biology may help overcome the current limitations, enabling the use of cathelicidins in future therapeutics. Furthermore, a better understanding of the mechanisms of cathelicidin action in vivo and their synergy with other host molecules will contribute to the development of safer, highly effective therapies.</p>
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