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**Peptide conjugates
towards the treatment
of diabetic foot ulcers**



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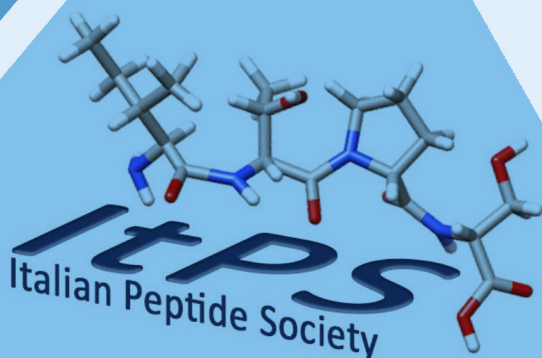
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Peptide conjugates towards the treatment of diabetic foot ulcers

Due to widespread multidrug - resistant (MDR) microbes, efficient treatments for complex infected wounds like diabetic foot ulcers (DFU) are being exhausted. The current standard of care requires oral antibiotics and other measures, often complex, painful, and distressing (e.g., debridement, amputation). A perfect treatment should promote both antimicrobial protection/action and fast tissue regeneration, to improve the inefficient healing that characterizes chronic wounds like DFU, where diabetes - associated biochemical imbalance impairs healing. Considering the above, we are working on peptide conjugates as potential active pharmaceutical ingredients for topical formulations to tackle DFU, combining an antimicrobial peptide and a short cosmeceutical peptide with collagen - inducing action. The best chimera constructs exhibited: (i) antibacterial and anti - biofilm activity against Gram positive and Gram - negative bacteria, including MDR clinical isolates; (ii) retained activity against *S. aureus* in simulated wound fluid; and (iii) antifungal activity. To decrease the chimera construct size, the antimicrobial peptide was replaced by an ionic liquid, with intrinsic antimicrobial properties, affording a new peptide - ionic liquid construct (PILc). These new PILc shows in vitro broad - spectrum antibacterial activity, including against MDR clinical isolates, alongside antifungal and collagen - inducing actions . Moreover, preliminary in vivo assays confirm these promising features observed in vitro and, additionally evidenced anti - inflammatory and antioxidant action.

Altogether, PILc could be come the new hope for topical DFU treatment



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