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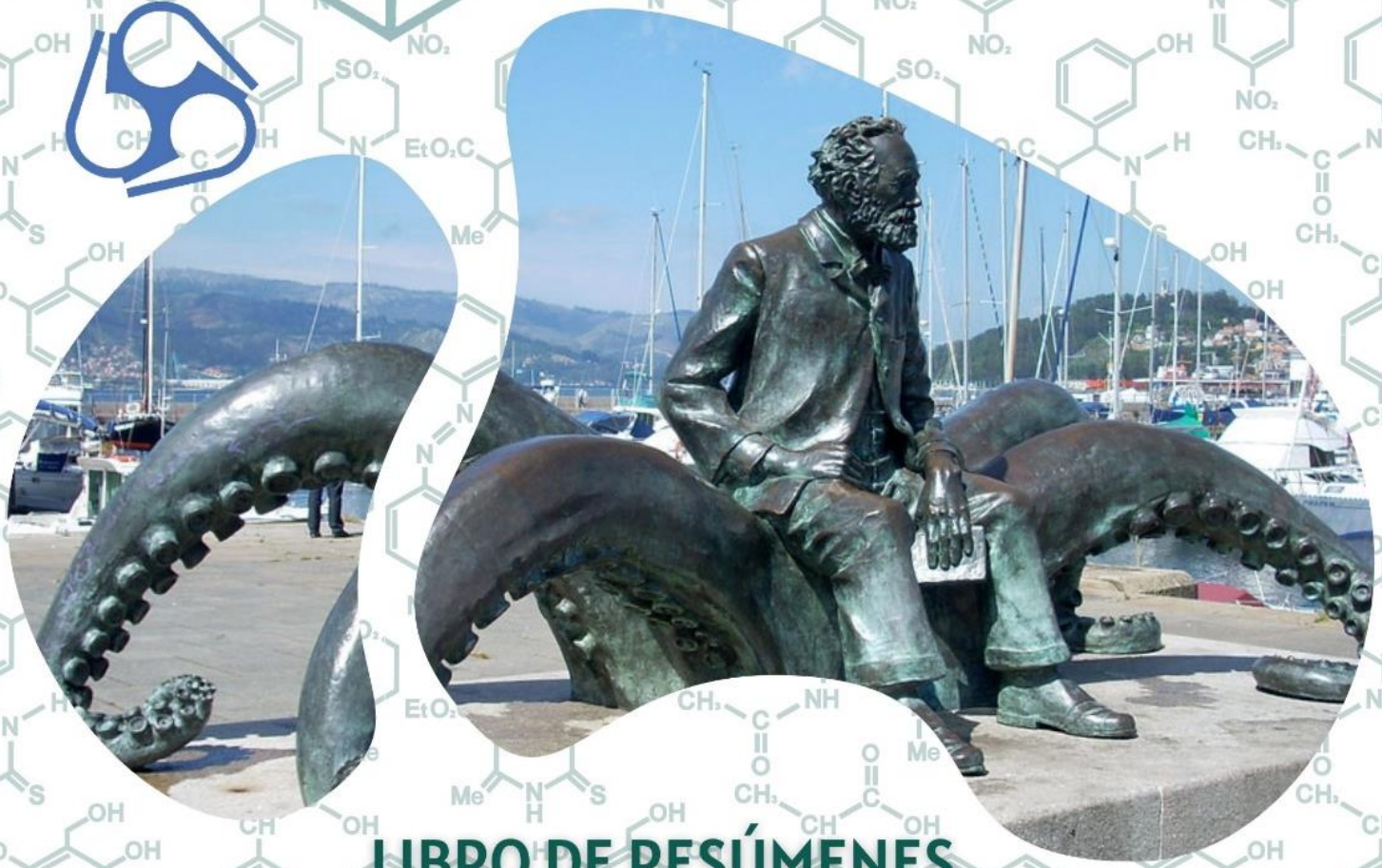

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In vivo activity of peptide-ionic liquid conjugates against diabetic wounds

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Due to widespread multidrug-resistant (MDR) microbes, efficient treatments for infected wounds are being exhausted, which means that there is an alarming lack of effective antibiotics to treat diabetic foot ulcers (DFU). The increasing life expectancy of the population and the growing incidence of unhealthy lifestyles is leading to a concerning rise in the number of people affected with diabetes and related complications, being DFU amongst the most troublesome. In 2014, already about 11% of the Portuguese population had diabetes and this number is continuously growing every year. [1] Like other chronic wounds, DFU are difficult to heal, but their association with other diabetes complications, such as peripheral neuropathy and ischemia, underpin an exceedingly low healing rate and high propensity for persistent infections.

In connection with the above, we have recently advanced peptide-ionic liquid conjugates (PILC) as potential active pharmaceutical ingredients for topical formulations to tackle DFU. PILC combine a short cosmeceutical peptide with collagen-boosting action, with an ionic liquid that has intrinsic antimicrobial action, linked together through the “click” copper-catalyzed azide-alkyne cycloaddition reaction. This revealed one conjugate with an outstanding performance *in vitro*, namely, potent collagen-inducing effect, alongside microbicidal (bactericidal and fungicidal) action.[2] This conjugate was now tested for its wound healing ability in a mouse model of streptozotocin (STZ)-induced type 1 diabetes. The promising results obtained thus far in this animal model, alongside biophysical investigations on the potential antimicrobial mechanism of action of PILC, will be presented in this communication.

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