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Anti-biofilm effect: combining bacteriophages with Portuguese honey

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Nowadays, the rising of multi resistant bacteria due to the misuse of antibiotics, together with the lack in the development of new antimicrobial molecules, represents a serious threat to Medicine. Many of these multi resistances bacteria are pathogens responsible for nosocomial infections causing problem in Human health and care. This work addresses the problematic of treating chronic wounds, lacerations and infected burns. In these types of infections, bacteria colonize the tissues and form biofilms, conditioning the effectiveness of antibiotics. Based on this reality, the development of news approaches to treat multi resistance organisms is essential. A combination of two antimicrobial solutions, bacteriophages (phages) and honey, is suggested herein. Bacteriophages (phages) are natural bacteria predators that specifically recognize hosts, destroying it. Honey is also able to destroy bacteria, but also to degrade biofilms, to improve the healing process, promoting tissue regeneration, and to decrease the inflammation. Both are efficient against antibiotic resistant microorganisms, including those present in chronic wounds. To date there is no study about this combinatorial therapy. In this study, the anti-biofilm effect of the combination of a Portuguese honey together with well-studied lytic phages was enhanced, in *Escherichia coli* and *Pseudomonas aeruginosa* biofilms relatively to the same antimicrobials used individually. This result was confirmed by a decrease in the total biomass, and by a reduction, in average, of more than 3 log of cultivable cells.