Serrapeptase vs. biofilms

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(I posted this to LymeNet but I am thinking it will get a better reception here due to the *gasp* scientific references!)

Although others may work, they only enzyme that has any evidence supporting its use against biofilms is Serrapeptase. I have heard that Alan MacDonald mentioned three agents that he thought would be effective, including heparin, garlic extract, and serrapeptase. I have not seen the 2008 UNH conference DVD to verify this myself. Serrapeptase and heparin definitely make sense to me, with serrapeptase being the more accessible/practical agent to use. I don't know if there is any evidence that orally-ingested garlic extract would be effective.

> Listeria monocytogenes is a notably invasive bacterium associated with life-threatening food-borne disease in humans. Several surface proteins have been shown to be essential in the adhesion of L. monocytogenes, and in the subsequent invasion of phagocytes. Because the control of the invasion of host cells by Listeria could potentially hinder its spread in the infected host, we have examined the effects of a protease treatment on the ability of L. monocytogenes to form biofilms and to invade tissues. We have chosen serratiopeptidase (SPEP), an extracellular metalloprotease produced by Serratia marcescens that is already widely used as an anti-inflammatory agent, and has been shown to modulate adhesin expression and to induce antibiotic sensitivity in other bacteria. Treatment of L. monocytogenes with sublethal concentrations of SPEP reduced their ability to form biofilms and to invade host cells.
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> http://www.ncbi.nlm.nih.gov/pubmed/1847 ... d_RVDocSum
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> Microbiological testing suggested that infection persisted in only one (5.6%) of eighteen animals in the serratiopeptidase-and-antibiotic group, whereas it was present in six (37.5%) of sixteen animals in the antibiotic-only group (p = 0.001). Histological evaluation showed similar results (kappa = 0.92). CONCLUSIONS: Serratiopeptidase was effective for eradicating infection caused by biofilm-forming bacteria in this experimental animal model. The antibiofilm property of the enzyme may enhance antibiotic efficacy in the treatment of staphylococcal infections.
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> http://www.ncbi.nlm.nih.gov/pubmed/1675 ... d_RVDocSum
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> Among the different mechanisms of bacterial resistance to antimicrobial agents that have been studied, biofilm formation is one of the most widespread. This mechanism is frequently the cause of failure in the treatment of prosthetic device infections, and several attempts have been made to develop molecules and protocols that are able to inhibit biofilm-embedded bacteria. We present data suggesting the possibility that proteolytic enzymes could significantly enhance the activities of antibiotics against biofilms. Antibiotic susceptibility tests on both planktonic and sessile cultures, studies on the dynamics of colonization of 10 biofilm-forming isolates, and then bioluminescence and scanning electron microscopy under seven different experimental conditions showed that serratiopeptidase greatly enhances the activity of ofloxacin on sessile cultures and can inhibit biofilm formation.