

The rules of microbial warfare: aspects in bacteriocins ecology and evolution

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bacteriocins comprise a large and functionally diverse family of toxins found in all major lineages of Bacteria. Numerous studies suggest these potent proteins serve to mediate microbial interactions and may even play a role in maintaining microbial diversity. Colicins produced by *E. coli* have served as a model for many such studies. These high molecular weight toxic proteins specifically target close relatives and kill through one of a variety of mechanisms, including pore formation and nuclease activity. The genes encoding colicins display a unique form of expression, which is confined to stressful conditions and lethal to the producing cell. Although little is known about the mechanisms involved, colicin induction appears to be dependent on host regulatory pathways and often involves the SOS regulation system. Given its lethal nature, it is almost certain that bacteriocin production has evolved a sophisticated system for repression and expression. We explored this unique form of lethal expression, using *in vitro*, *in vivo* (mouse model) and *in silico* models and begin to unravel the role bacteriocins play in orchestrating bacterial population dynamics.