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SUBVERSION OF BACTERIAL RESISTANCE BY LOW SOLUBILITY ANTIBIOTICS RELEASED FROM FIBRIN

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CATEGORY: BIO

KSU No. 179

BACKGROUND: Resistance to antibiotic treatment is increasingly common. Current strategies to overcome resistance include combination therapy with multiple classes of antibiotics, concurrent treatment with immunomodulating drugs or resistance inhibitors, or a mixture of these strategies. This invention describes how resistance can be overcome by using a delivery system based on fibrin, a naturally occurring protein involved in clot formation to provide a long-term release of effective antibiotic doses for control of resistant bacteria.

INVENTION DESCRIPTION: This invention combines fibrin sealant with low solubility antibiotics to overcome bacterial resistance in infections. Fibrin sealant is a binary mixture of proteins isolated from fractionated human plasma. When the components mix, they form cross-linked three-dimensional matrix with pores whose sizes are amenable to diffusion of various macromolecules. Various analytes can be added to the components, in this case antibiotics with low solubility. The low solubility limits antibiotic diffusion away from the matrix and results in higher local concentrations of the antibiotic for effective bacterial control.

APPLICATIONS: The invention will prove useful for infections with localized foci such as osteomyelitis, chronic sinusitis, burns and tissue grafts.

ADVANTAGES: Combining low solubility antibiotics into fibrin sealant should reduce the potential for side effects such as renal injury, nerve cell damage, hypotension and further development of antibiotic resistance by commensal bacteria.

INVENTORS: Woolverton

PATENT STATUS: U.S. Patent Application 6,395,288.

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