Boosting 'mussel' power: New technique for making key marine mussel protein

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By adding a certain gene to genetically engineered bacteria, researchers have increased production of a sticky protein from mussels that could lead to better, cheaper antibacterial coatings. Credit: Courtesy of Hyung Joon Cha

Researchers in Korea report development of a way to double production of a sticky protein from marine mussels destined for use as an antibacterial coating to prevent life-threatening infections in medical implants. The coating, produced by genetically-engineered bacteria, could cut medical costs and improve implant safety, the researchers say. Their study is scheduled for the June 6 issue of ACS' *Biotechnology Progress*.

Bacterial infection of medical implants, such as cardiac stents and

dialysis tubing, threatens thousands of people each year and is a major medical challenge due to the emergence of antibiotic-resistant bacteria. Several research groups are working on long-lasting, germ-fighting coatings from mussel proteins, but production of these coatings is inefficient and expensive.

Hyung Joon Cha and colleagues previously developed a way to use genetically engineered E. coli bacteria to produce mussel adhesive proteins. Now they report adding a new gene for producing Vitreoscilla hemoglobin (VHb), a substance that boosts production of proteins under low-oxygen conditions. Adding the VHb gene to the engineered E. coli doubled the amount of mussel proteins produced, which could lead to more cost-effective coatings, the researchers say.

Source: American Chemical Society