Mother Nature's antibacterial dyes: Bright colors and a knockout punch for germs

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A strain of marine bacteria produces large amounts of bright red pigments that can be used as a natural dye for wool, nylon, silk and other fabrics, scientists in California are reporting. The dyes from Mother Nature's palate also have an anti-bacterial effect that could discourage harmful bacteria from growing on socks, undergarments, and other clothing, they report in a study scheduled for the June 6 issue of ACS' *Biotechnology Progress*.

In the new research, graduate student Farzaneh Alihosseini, her adviser Gang Sun and colleagues point out that conventional dyes and pigments used in clothing have several drawbacks. Many are made from non-renewable resources such as petroleum, and are potentially harmful to the environment and human health. In addition, concerns exist about the potential toxicity of existing antibacterial-fabric coatings.

The researchers found that a certain strain of bacteria isolated from marine sediments produces large quantities of bright red pigments called prodiginines that can be used to dye clothing. In laboratory tests, the pigments worked on wool, silk, nylon, and acrylic fabrics as efficiently and effectively as some conventional dyes.

The pigments showed strong antibacterial activity against harmful bacteria, including E. coli and Staphylococcus aureus, when applied to most of the fabrics tested.

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