Bacteria could make new library of cancer drugs that are too complex to create artificially

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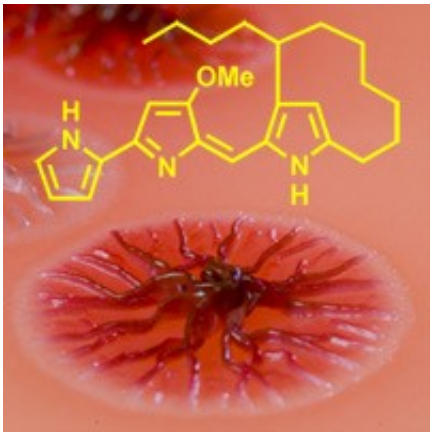

A colony of S. coelicolor bacteria that could be used to make a prodiginine such as streptorubin (shown in yellow).

Researchers at the University of Warwick are examining a way of using bacteria to manufacture a new suite of potential anti-cancer drugs that are difficult to create synthetically on a lab bench.

The bacterium Streptomyces coelicolor naturally produce antibiotics called prodiginines.

This group of antibiotics has stimulated much recent interest as they can be used to target and kill cancer cells. A synthetic prodiginine analogue

called GX15-070 is currently in phase 1 and 2 cancer treatment trials. However, analogues of other prodiginines, such as streptorubin B, could be even more powerful anti cancer tools, but they cannot currently be easily synthetically produced on a lab bench.

Professor Greg Challis and colleagues in the Chemistry Department of the University of Warwick have looked at the enzymes controlling the process that allows the bacterium Streptomyces coelicolor to create streptorubin B and have gained a clear understanding of which are the key enzymes that act at particular steps of that process. By manipulation of the enzyme content of the bacteria, they aim to produce a range of different compounds based closely on the form of streptorubin B normally formed by the bacteria. Some of these analogues of streptorubin B could provide the basis for developing useful new anti cancer drugs.

Professor Challis said:

"This approach combines the strengths of conventional organic synthesis, with the synthetic power of biology, to assemble complex and synthetically difficult structures. It could be particularly valuable for generating analogues of streptorubin B with all the promise that holds for the development of new anti cancer drugs"

The full paper was published in *Chem. Commun.*, 2006, 3981 - 3983
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Source: University of Warwick