

## Natural alternatives to antibiotics: scientifically sound or muddled myth?



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Antibiotic resistance is now acknowledged as one of the greatest threats faced by 21<sup>st</sup> Century medicine. The resistance crisis is now so acute that the prospect of a return to a pre-antibiotic era, when infections which once were easily curable by antibiotics will no longer be treatable, is now a frighteningly real possibility. Despite the crisis,

few new antibiotics are under development. Students from Boroughbridge High School investigated whether natural alternatives to antibiotics, in the form of plant essential oils, could be developed to treat infections caused by bacteria resistant to conventional antibiotics.

The project was intended to introduce the students to key concepts of antimicrobial resistance and to gain a wider appreciation of the significance of the resistance crisis for public health. It was truly multidisciplinary with students engaging in aspects of microbiology, plant biology, chemistry, pharmacology and epidemiology as well as the history of medicine and infectious diseases.

As well as work in the laboratory, students visited a local bush craft expert who showed them plants with reputed medicinal properties and also local Benedictine monastery, where the Friar gave them access to: *The Sovereign book of Medicine* (1650). In addition, samples of our oils have been analyzed at the Department of Chemistry, University of York, to tell us which chemical compounds are present.

The project has sustainability with a number of spin-off projects already identified. Having established that essential oils contain chemicals that can inhibit microbial growth and identified the active chemical constituents, this year we are going to try to cause the bacteria to develop resistance to some of them as rapid development of resistance would have implications for use of these agents in clinical medicine.