Nanoparticles research aids drug development

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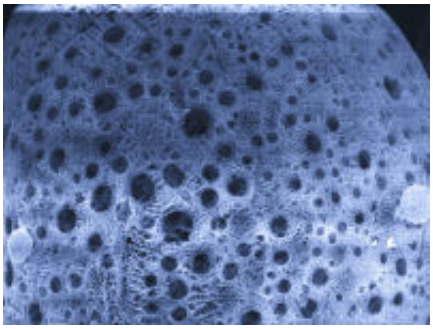

Electron Microscope picture of soluble materials where the pores have been engineered by chemists.

(PhysOrg.com) -- Scientists at the University of Liverpool have developed a new technology which can dramatically improve the effectiveness of antibacterial treatments.

Drugs with the ability to dissolve have much stronger efficacy, however many drugs are insoluble. In order to compensate, drugs often need to be administered in higher doses. This increases the possibility of bacteria and other organisms mutating as the high doses make it easier for them to build resistance to the drugs. This leads to treatments becoming obsolete and the need for new medicines to be developed.

Chemists at the University of Liverpool working with IOTA NanoSolutions have now developed a new technology to produce

nanoparticles of insoluble drugs that mimic the behaviour and the effectiveness of dissolved drugs.

Nanoparticles are man-made particles manufactured for use in a number of industries including the cosmetic and pharmaceutical industry; they can make materials stronger, lighter and cleaner.

Recent data has shown that in some cases, low concentrations of insoluble drugs in a nanoparticle form can be more active than previously thought, offering the potential to administer drugs in low dosages without reducing the effectiveness of the treatment. The new technology is allowing the scientists to develop new medicines by converting currently available drugs into a nanoparticle form. Antiparastitic drugs to treat malaria are also being developed in collaboration with the Liverpool School of Tropical Medicine.

Professor Steve Rannard, from the Department of Chemistry who is also co-founder and current Chief Scientific Officer of IOTA NanoSolutions, said: “Already our technology has shown the potential to improve a range of current medicines and may lead to treatments that prevent drug resistance. If our approach can deliver new antimalarial treatments, it may help to prevent millions of deaths per year and improve the lives of hundreds of millions of current malaria sufferers.”

This research is published in *Nature Nanotechnology*.

Provided by University of Liverpool