

Research to spotlight carbon monoxide benefits

Scientists at the University of York have won a grant of £110,000 to investigate potential uses of carbon monoxide in treating disease.

Dr Jason Lynam and Dr Ian Fairlamb, of the University's Department of Chemistry, have been awarded the funding by the Leverhulme Trust for a three-year study into the use of metal compounds for the controlled release of carbon monoxide into the bloodstream.

Carbon monoxide is an anti-inflammatory, and they want to explore its potential in treating high blood pressure, heart disease and possibly cancer. The project builds on a study conducted by Roberto Motterlini (Northwick Park Hospital in London) and Professor Brian Mann (University of Sheffield), and preliminary studies conducted in York, supported by funds from the University and Engineering and Physical Sciences Research Council (EPSRC).

Dr Fairlamb said: "You can use certain carbon monoxide molecules to elicit a whole range of biological effects. Carbon monoxide causes vasorelaxation and is produced naturally as a result of the breakdown of haemoglobin. This can be seen in the healing process of a bruise, where various colour changes indicate the degradation of haemoglobin and release of carbon monoxide. The slow release of carbon monoxide reduces blood pressure for someone who has angina, for instance.

"This work is very much in its infancy. We became involved because some of our organometallic compounds, which carry carbon monoxide, were showing potential to release carbon monoxide slowly in a controlled manner. They degrade to give benign non-toxic products which do not target immune response."

Dr Lynam added: "We don't want to administer carbon monoxide in its normal toxic gaseous form; rather we want to develop molecules that will release it in a sort of slow trickle feed. We aim to make tuneable compounds which allow you to alter the rate at which carbon monoxide is released, which could be important in different bioapplications.

"We are adopting a complementary approach to the design of these molecules using the natural interface between organic and inorganic chemistry."

The project will examine the physical and electronic characteristics of potentially suitable compounds and identify those which are absorbed best by the body with the aim of starting clinical studies in three years' time.

Source: University of York

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