

Anti-inflammatory effect of 'rotten eggs' gas

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Researchers from the Peninsula Medical School in Exeter have synthesized a new molecule which releases hydrogen sulfide (H_2S) - the gas that gives rotten eggs their characteristic smell and which has recently been found to be produced naturally in the body - and discovered that it could in time lead to a range of new, safer and effective anti-inflammatory drugs for human use.

The study has been published in respected journal *Free Radical Biology and Medicine*.

The new molecule can generate H_2S slowly, which is a major breakthrough. Until now, H_2S could only be delivered in one go via a gas cylinder or through the use of sulfide salts. Both of which are administered as a large bolus to generate instant H_2S and are generally highly toxic, in addition to being foul smelling.

The research team investigated the role of H_2S in endotoxic shock, which causes a fatal loss of [blood pressure](#) and extensive tissue inflammation. They discovered that when H_2S is delivered in a slow and sustained manner, a potent anti-inflammatory effect is produced. Cell signalling molecules that drive inflammation, such as $\text{TNF}\alpha$, IL-1, IL-6 and prostaglandins, were reduced while levels of the body's own anti-inflammatory molecules (i.e. IL-10) were increased. Using H_2S donating [molecules](#) to control H_2S delivery in the body could pave the way for the development of novel approaches to the treatment of inflammatory disorders.

Dr. Matt Whiteman from the Peninsula Medical School, Exeter commented: "We have known for a few years that H₂S levels in tissue and blood are markedly elevated during inflammation. It was assumed that this was a bad thing. However, our research is suggesting that H₂S could be elevated as part of the body's way to limit inflammation."

He added: "Although traditional [anti-inflammatory drugs](#) are very potent and safe, they can sometimes damage the stomach lining in some individuals leading to further complications. Generating H₂S in a controlled and sustained manner offers the potential for the development of a new group of anti-inflammatory drugs or lead to the modification of existing drugs so they also release H₂S and hopefully come with less gastrointestinal side-effects."

Dr. Whiteman is highly enthusiastic about the future, adding: "The next step is to secure further funding to expand our work into the clinical setting. We strongly believe that this new and innovative area of research could hold the key to a range of applications for human health. Indeed, we have already shown that the use of H₂S and this new H₂S donor is beneficial in models of high blood pressure. We are only just starting to unravel the role of H₂S has in the body in health and disease."

Source: The Peninsula College of Medicine and Dentistry

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