Method for Quantifying and Differentiating Reactive Oxygen Species via NMR

TECHNICAL FIELD
Chemistry

APPLICATION
ROS Detection

DESCRIPTION

Reactive oxygen species (ROS) are a type of highly reactive oxygen species generated when molecular oxygen is not fully reduced or elevated to an electronic state. ROS are stress markers, and they are very closely related to cellular functions. An imbalance between the amount of ROS and antioxidants can be a contributing factor in the development of diseases like asthma, cancer, pulmonary hypertension, and Parkinson's.

Although ROS are a factor in many areas, differentiation and quantification of these species is difficult due to their high reactivity and short half-life. Existing techniques include spectroscopic, electrochemical, and electron spin methods, which generally require sophisticated instruments due to weak phosphorescence signals. Fluorescent methods have limited sensitivity and specificity. Additionally, there is usually more than one ROS present at once, and these methods are unable to differentiate ROS simultaneously.

Dr. Zhang and his team have developed an innovative technique to quantify and differentiate two reactive oxygen species, superoxide anion radical and singlet oxygen simultaneously using NMR. This technique can also be used to find ROS scavengers and antioxidants.

For discussions around learning more or licensing this technology, please contact Madison Bourbon today.

ADVANTAGES
- Can quantify and differentiate ROS simultaneously
- Can be used to detect ROS scavengers
- Able to identify two of the most common ROS, superoxide anion radical and singlet oxygen

INVENTORS

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