

Mitochondria Targeted Spin Traps

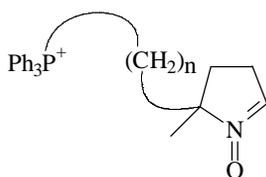
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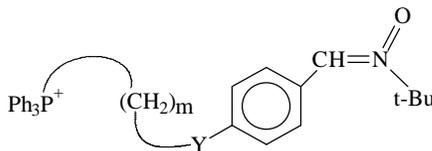
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Reactive oxygen species (ROS) have been implicated in a number of disease states arising from oxidative damage in cells, eg: diabetes, rheumatoid arthritis, cataract formation, cerebral and myocardial ischaemia/reperfusion injury, Alzheimers', aging and cancer. ROS are by-products of the respiration process which takes place in the mitochondria contained within the cellular environment. Chemicals containing a lipophilic phosphonium moiety attached to a reactive component can target and concentrate in mitochondria and this is the basis of an integrated chemistry/biology research program to develop therapies for mitochondrially-based diseases¹.

Modified spin traps have been designed to monitor and inhibit mitochondrial ROS production. 5,5-Dimethyl-N-pyrrolidone (DMPO) and phenyl-*t*-butyl nitron (PBN) analogues, mit-DMPO and mit-PBN, have been synthesised and their chemistry will be reported.



mit-DMPO



mit-PBN

¹ Advanced Drug Delivery Reviews, 41: 235-250 (2000).