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2,3-Diarylxanthenes as strong scavengers of reactive oxygen and nitrogen species: A structure-activity relationship study

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Abstract: Xanthenes are a class of oxygen-containing heterocyclic compounds widely distributed in nature. The natural derivatives can present different substitutions in the xanthone core that include hydroxyl, methoxyl, prenyl and glycosyl groups. The inclusion of aryl groups has only been reported for a few synthetic derivatives, the 2,3-diaryl moiety being recently introduced by our group. Xanthenes are endowed with a broad spectrum of biological activities, many of them related to their antioxidant ability, including the scavenging of reactive oxygen species (ROS) and reactive nitrogen species (RNS), as well as metal chelating effects. Considering the interesting and promising antioxidant activities present in compounds derived from the xanthone core, the main goal of this work was to evaluate the scavenging activity of the new 2,3-diarylxanthenes for ROS, including superoxide radical (O₂⁻), hydrogen peroxide (H₂O₂), singlet oxygen (¹O₂), peroxy radical (ROO[•]) and hypochlorous acid (HOCl), and RNS, including nitric oxide (NO) and peroxyxynitrite anion (ONOO⁻). The obtained results revealed that the tested 2,3-diarylxanthenes are endowed with outstanding ROS and RNS scavenging properties, considering the nanomolar to micromolar range of the IC₅₀ values found. The xanthenes with two catechol rings were the most potent scavengers of all tested ROS and RNS. In conclusion, the new 2,3-diarylxanthenes are promising molecules to be used for their potential antioxidant properties. (C) 2010 Elsevier Ltd. All rights reserved.

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[Synthesis of Novel 1-Aryl-9H-xanthen-9-ones.](#)
SYNLETT, JUN 2011.

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[Structure-activity relationships in hydroxy-2,3-diarylxanthone antioxidants. Fast kinetics spectroscopy as a tool to evaluate the potential for antioxidant activity in biological systems.](#)
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