# Dose dependent effects of mitochondrial targeted nitroxides on malignant mesothelioma cells.

**Abstract**

Malignant Mesothelioma (MM) is a cancer linked to the occupational exposure to asbestos. It has been characterized as having increased levels of mitochondrial derived reactive oxygen species (ROS) that drive proliferation and aid in apoptotic evasion. Increased levels of ROS cause cells to undergo oxidative stress, which can lead to cellular damage and activate core cell signaling pathways, while higher levels lead to cell death. This study examined the effects of the mitochondrial targeted compound Mitoquinone (Mito-Q) on oxidant production and mitochondrial morphology in two MM cell lines (H2373 and HM) and one immortalized mesothelial cell line (LP9). Mito-Q caused biphasic responses to oxidant production on two of the three cell lines tested. It was found to reduce the effects of Mito-CP, a compound shown to be a pro-oxidant in MM cells. Mito-Q induced rearrangement of the mitochondrial network in MM cells, reduced FoxM1 protein expression, and decreased cell viability alone and in combination with the anti-tumor compound thiostrepton (TS). Our results indicate that Mito-Q alters mitochondrial dynamics and has the potential to be a viable treatment for MM, either alone or in combination with TS.