

Molecular chaperone Hsp90 as a target for oxidant-based anticancer therapies

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Hsp90 is a molecular chaperone involved in the stabilization of many oncoproteins that are required for the acquisition and maintenance of the so-called six major hallmarks of cancer cells. Various strategies have, therefore, been developed to inhibit the chaperone activity of Hsp90 and induce cancer cell death through the destabilization of its client proteins. Among these strategies, we have shown that generation of oxidative stress leads to the cleavage and deactivation of Hsp90. Because cancer cells are often deficient in antioxidant enzymes and exhibit higher basal levels of reactive oxygen species (ROS) than their normal counterparts, inducing a selective oxidative stress may be a promising approach for cancer treatment. Thus, many redox-modulating agents have, therefore, been developed or are undergoing clinical trials and Hsp90 represents a new target for oxidative stress-generating agents. The purpose of this article is to review the current state of knowledge about Hsp90 and