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Sommario/riassunto	<p>Cancer is a great challenge to efficient therapy due to biological diversity. Disturbed oxidative homeostasis in cancer cells certainly contributes to differential therapy response. Further, one of the hallmarks of cancer cells is adaptation which includes fine tuning of the cellular metabolic and signalling pathways as well as transcription profiles. There are several factors which contribute to the tumor diversity and therapy response, and oxidative stress is certainly one of them. Changes in oxygen levels due to hypoxia/reoxygenation during tumor growth modulate antioxidative patterns finally supporting increased cell diversity and adaptation to stressing conditions. Additionally, cancer chemotherapy based on ROS production can also induce also adaptation. To counteract these negative effects natural products are often used for their antioxidant activities as well as photodynamic therapy supported by novel chemosensitizers. Understanding of possible pathways which can trigger antioxidant defence at a certain time during cancer development can also provide possible strategies in fighting cancer.</p>