



Special Issue Reprint

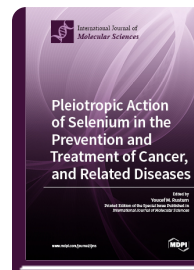
Pleiotropic Action of Selenium in the Prevention and Treatment of Cancer, and Related Diseases

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Gene cloning and sequence has provided the opportunity to identify and characterize the functional role of biomarkers expressed in and on tumor cells and the surrounding microenvironment. Molecular and immunologic heterogeneity of cells in the tumor microenvironment contributes to instability, enhanced angiogenesis, and drug resistance of the tumor cell. Since tumor cells are the ultimate therapeutic targets for drugs and therapy development, the tumor microenvironment that regulates the growth and the delivery of effective drug concentrations to tumor cells is the gatekeeper. Thus, to have a significant impact on the overall survival and cure of patients with advanced cancer, the stabilization of the tumor microenvironment should be the initial treatment, followed by treatment that targets and kills tumor cells.

Antiangiogenic therapies hold considerable promise in the treatment of a subset of cancer patients and are reported to have a significant impact on the stabilization of the tumor microenvironment. More recently, selenium-containing molecules, such as selenomethylselenocysteine, seleno-L-methionine, and selenized yeast, among others, have been shown to target and modulate biomarkers associated with tumor cells and the tumor microenvironment. The effects are selenium type-, dose-, and schedule-dependent. The pleiotropic actions of selenium are necessary for tumor cell sensitization, and synergy with mechanism-based combinations. This Special Issue is devoted to highlighting evidence for the potential role of specific types, doses, and schedules of selenium alone and in combination with mechanism-based biologic and cytotoxic therapies for the prevention and treatment of cancer and related diseases. The collection of contributions should provide a comprehensive overview of the pharmacology, metabolism, and detoxication of the different types of selenium molecules, relevant to the use of selenium as a potential modulator of the therapeutic efficacy and toxicity of biologic and cytotoxic therapies for cancer and related diseases. The pleiotropic action of specific types of

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