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Distinct classes of selenium-containing proteins in carcinogenesis and clinical outcome

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Selenium is a trace element that plays a critical role in physiological processes and cancer prevention, whose functions may be through its effects on selenium-containing proteins. One of these, selenium-binding protein 1 (SBP1), is a protein of unknown function that has been shown to be significantly reduced in tumors of diverse tissue types as compared to the corresponding normal tissue. More importantly, SBP1 has also been reported to be a predictor of clinical outcome, higher levels of SBP1 are linked to better prognosis and longer survival time in colorectal cancers. Moreover, the levels of SBP1 are inversely associated with the levels of glutathione peroxidase1 (GPx-1), a protein representative of a different class of selenoproteins, in colorectal and prostate normal and cancer tissues. GPx-1 is an anti-oxidant, selenocysteine containing enzyme implicated in several diseases, including cancer, due to the association of specific alleles with disease risk. Interestingly, increased expression of SBP1 does not alter GPx-1 expression but suppresses GPx-1 enzyme activities, and increased expression of GPx-1 down regulates SBP1 expression levels. The relationship between SBP1 and GPx-1 represents a unique example of a molecular interaction between selenium-containing proteins with a likely significant impact on human health and disease. Taken together, the crosstalk between these two distinct classes of selenium-containing proteins plays a critical role in carcinogenesis and SBP1 could be used as a potential biomarker for cancer progression, prognosis and prognostic indicator of cancer outcomes.

Biography

Wancai Yang was trained as a pathologist in China and received postdoctoral training in Rockefeller University, USA. He is a Professor of Pathology and Dean of the School of Basic Medical Sciences at Xinxiang Medical University, China, and an Adjunct Associate Professor of University of Illinois at Chicago, Chicago, Illinois, USA. He has published more than 60 papers in high-impact journals about his research on colorectal and esophageal cancers. He has also been serving as grant reviewer, article reviewer and editorial board members of reputed journals.

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