

Inactivation of Protein Tyrosine Phosphatases by Endogenous and Dietary Agents

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Abstract

Protein Tyrosine Phosphatases are a class of enzymes that control a number of critical signaling pathways inside cells. We have discovered a number of dietary and endogenous agents that are capable of modifying these enzymes, and therefore disrupting signaling pathways inside cells. It is possible that these small molecules are exerting their widely reported biological effect by the modification of protein tyrosine phosphatase activity. This information is critical to our understanding of dietary effect on diseases like diabetes and cancer.

In addition to this work, we have explored the chemistry of the most common DNA lesion, the abasic site. We have found it is capable of producing an interstrand crosslink in duplex DNA, when placed in the right sequence context. This work significantly expands our understanding of the toxicity of abasic sites to cells.

Furthermore, this work may result in developing novel treatment strategies for cancer.