

Letters to the Editor

Folate, Cancer, and the Common 4,977 bp Deletion¹

To the Editors: Pelucchi et al. found that folate deficiency increases prostate cancer risk (1). They attributed this to DNA hypomethylation and uracil misincorporation leading to chromosome breaks. However, mitochondrial DNA (mtDNA) should be considered as well. Like chromosomal DNA, mtDNA is vulnerable to breaks due to the uracil excision process (2).

Crott et al. found that folate reduced the level of 4.8 kb deletion in rat mtDNA (2). The 4.8 kb deletion is homologous to the common 4,977 bp deletion in human mtDNA. The common 4,977 bp deletion results in an increased generation of reactive oxygen species (3), which are tumorigenic (4).

Damage to mtDNA, as well as chromosomal DNA, should be considered when looking at the relationship between folate and cancer.

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References

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3. Lu CY, Lee HC, Fahn HJ, Wei YH. Oxidative damage elicited by imbalance of free radical scavenging enzymes is associated with large-scale mtDNA deletions in aging human skin. *Mutat Res* 1999;423:11–21.
4. Storz P. Reactive oxygen species in tumor progression. *Front Biosci* 2005;10: 1881–96.

¹ The authors of the original article were invited to respond but did not do so.