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Increased Dietary Folate Enhances the Effectiveness of Sorafenib Treatment in Renal Cell Carcinoma

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Folate and Cancer-Finding a Healthy Balance



Folate and Renal Cell Cancer (RCC)

Inconclusive results from clinical studies

- Meta-Analysis shows no clear correlation with serum folate levels
- Folic acid supplementation showed 3% decrease of RCC

Drawbacks of studies

- Heterogeneity of population
- Dietary intake often determined through questionnaire

Sorafenib

- Tyrosine Kinase Inhibitor
- Targets angiogenesis
- Commonly used in hepatocellular carcinoma

How does dietary folate intake affect the growth of renal cell carcinoma?

Does dietary intervention sensitize tumors to Sorafenib?



Experimental Design: Dietary Intervention

Red Blood Cell Folate Levels





* p<0.05

No effect of dietary folate intervention on tumor size



High folate diet sensitized tumors to Sorafenib



Decreased microvessel density in high folate diet + Sorafenib



Conclusions

> Dietary folate intervention had no clear effect on tumor growth by itself

Increased dietary folate sensitized tumors to Sorafenib treatment

> This corresponded with a decrease in microvessel density

Sorafenib is no longer widely used in RCC due to higher toxicity to similar chemotherapeutic drug Sunitinib. This study highlights a potential for folic acid to be used in conjunction with lower doses of Sorafenib to increase its efficacy while potentially limiting toxicity.

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