

LETTER TO THE EDITOR

STAUROSPORINE AND ITS EVOLVING ROLE IN INHIBITION OF GROWTH IN MALIGNANT TUMORS

November 18, 2012

Dear Sir

BRUGES *et al.* have reported interesting data in their article¹. Interestingly, recent data suggests that staurosporine can inhibit tumor growth in a number of systemic malignancies.

For instance, staurosporine demonstrates anti-proliferative effects in prostate carcinomas. It causes significant attenuation of cyclin D1 expression within the cancerous cells². It also increases the translocation of cytochrome c to the cytoplasm and has an enhancing effect on intra-tumoral apoptosis. As a result it markedly decreases tumor growth in prostate malignancies. Besides this, staurosporine also up-regulates the expression of TIMP-1 as a result of increased transcription. This further attenuates tumor invasiveness. Staurosporine also causes increased expression of tau in the cancerous cells⁸. As a result staurosporine increases differentiation of the cancerous cells to cells with neuronal features. As a consequence, tumor invasiveness is attenuated by as much as 20%. It also augments PARP inactivation at the same time⁹.

Similar effects are seen in non-small cell lung carcinomas. Staurosporine augments the activity of thymidine kinase-2 within the tumor⁴. As a result, it increases the chemo-sensitivity of lung tumors to chemotherapeutic agents such as gemcitabine and cisplatin. dCK activity is also increased simultaneously while E2F expression is decreased. At the same time, staurosporine down-regulates RNR expression⁷. Retinoblastoma gene product expression is also altered by staurosporine⁵. Similar effects are seen in gastrointestinal malignancies such as gastric carcinomas. Staurosporine administration results in up-regulation of the p21WAF1 gene⁶. As a result, there is augmented G2/M phase arrest. Apoptosis is markedly increased. As a result tumor growth is markedly attenuated.

The above examples clearly illustrate the significant anti-proliferative and apoptotic features of staurosporine and the need for further studies to explore and harness its anti-neoplastic effects.

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