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 cells3. 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 time4.

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.

Shailendra KAPOOR
University of Illinois at Chicago
75 Kristin Circle 413
Schaumburg Illinois 60195 Chicago IL, USA
E-mail: shailendrakapoor@yahoo.com

REFERENCES