

Fluoxetine acts not only as an antidepressant: inhibitory effect on murine melanoma growth

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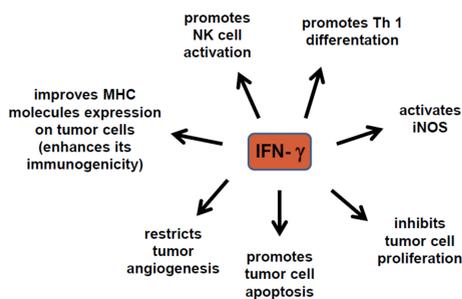
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Introduction

The discovery of fluoxetine (selective serotonin reuptake inhibitor, SSRI) was a giant step forward in the pharmacotherapy of depression.

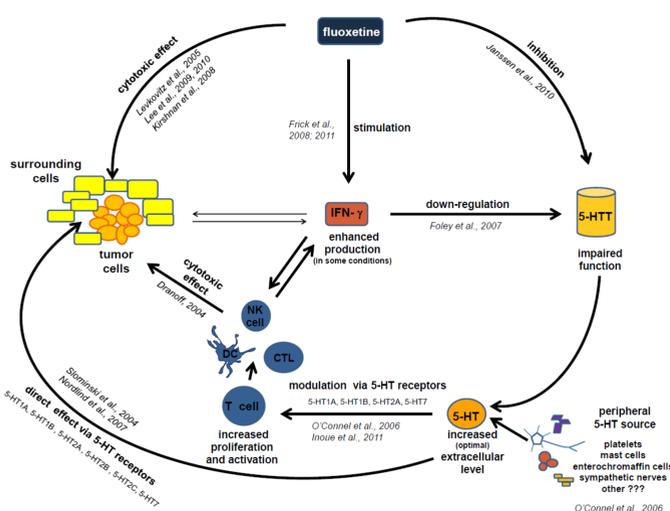
Regardless of the action in the central nervous system, fluoxetine influences the peripheral organs, e.g. by regulating the immune system. Despite strong evidence of an immunosuppressive effect of SSRIs and other antidepressants [Janssen et al., 2010], recent studies reported that fluoxetine may increase the level of pro-inflammatory cytokines [Frick et al., 2008, 2011]. One of these immunity-mediating proteins is IFN- γ , a Th1 cytokine which plays a key role in generating anti-tumor responses.



Antidepressants, including fluoxetine are often used to alleviate mood disorders, such as depression and dysthymia in cancer patients. However, long-term effects of these pharmaceutical agents on cancer progression and tumor immunity have not been fully recognized.

Materials

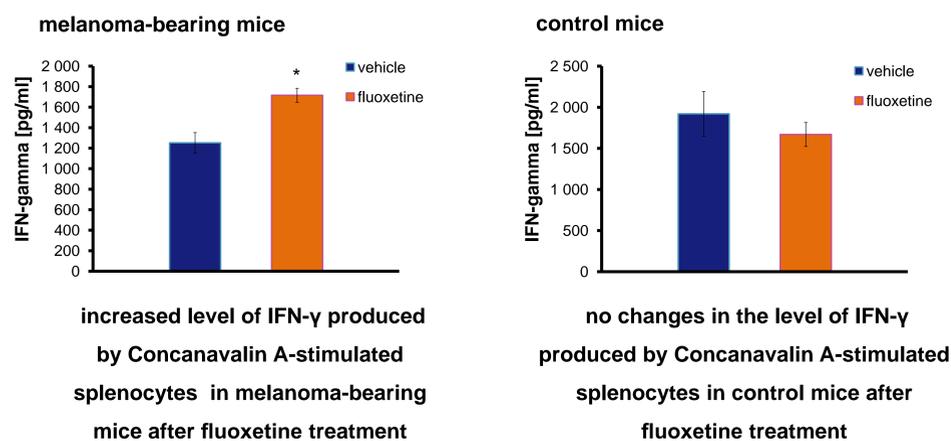
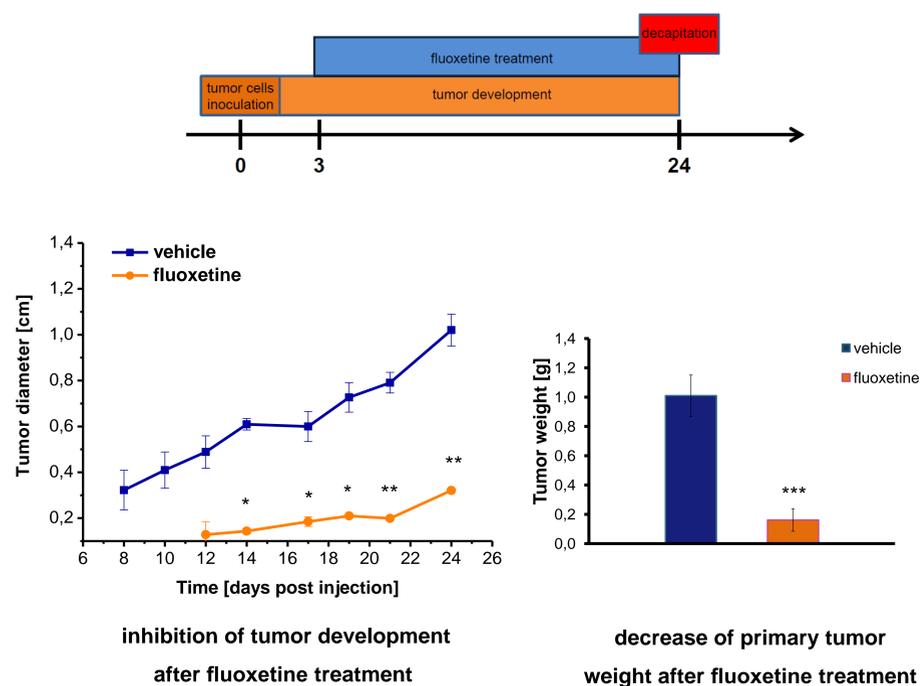
Cloudman S91 melanoma cells (0.3×10^6) were inoculated s.c. into the left flank region of female DBA/2 mice. Fluoxetine (10 mg/kg) or saline were administered intraperitoneally (i.p.) daily for three weeks after tumor cells inoculation. Control animals (without tumor cells) received fluoxetine (10 mg/kg) or saline. Tumor diameters were measured every second day and the average diameter was assessed according to the formula $(a \times b \times c)^{1/3}$ (a – tumor length, b – tumor width, and c – tumor height). After 24 days animals were decapitated, and tumor weight was assessed. The level of IFN- γ produced by splenocytes was determined using ELISA assay.



Aim of study

The aim of present study was to evaluate the effect of fluoxetine on Cloudman S91 melanoma development in DBA/2 mice

Results



Conclusions

Fluoxetine reveals anti-tumor properties. It seems likely that the anti-tumor actions of fluoxetine are not only a direct consequence of inhibition of serotonin reuptake. This pharmacological agent have significant cytotoxic effect on tumor cells, as well as ability to influence the immune system. The possibility that fluoxetine may be used therapeutically to modify or augment immune responses in cancer patients should be considered.