

## **Transgenic overexpression of erythropoietin does not alter adult neurogenesis and learning**

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Erythropoietin (Epo) is produced by the kidneys under hypoxic conditions and stimulates erythropoiesis. In humans and mice acute injections of Epo have shown positive effects on learning, memory, attention and mood. Both, Epo and its carbamylated derivate also increased neurogenesis in healthy mice. The present study investigated the effect of Epo on learning, memory and neurogenesis using transgenic mouse lines that overexpress human Epo exclusively in the brain (Tg21) or constitutively in both plasma and brain (Tg6). Learning and memory were assessed by means of a wide range of conventional tests and in the IntelliCage. To assess adult neurogenesis we quantified proliferating cells and young cells of the neuron lineage in relation to the total number of granule cells in the dentate gyrus. No differences were found between Tg21 or Tg6 and wild type animals in learning and memory. We found the expected differences between younger and older animals in proliferation and neuronal differentiation, but there was no difference between transgenic and wild type animals. The total number of granule cells was also similar in Tg21, Tg6 and wild type animals. In conclusion, we could not find any positive effect of chronic endogenous overexpression of Epo in learning, memory and neurogenesis, narrowing Epo's brain impact to the previous observation of altered reaction to reward and increased anxiety. Supp. SNF NCCR Neuro, ZIHP.