

Turmeric compound boosts regeneration of brain stem cells

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A bioactive compound found in turmeric promotes stem cell proliferation and differentiation in the brain, reveals new research published today in the open access journal *Stem Cell Research & Therapy*. The findings suggest aromatic turmerone could be a future drug candidate for treating neurological disorders, such as stroke and Alzheimer's disease.

The study looked at the effects of aromatic (ar-) turmerone on endogenous neural [stem cells](#) (NSC), which are stem cells found within adult brains. NSC differentiate into neurons, and play an important role in self-repair and recovery of brain function in neurodegenerative diseases. Previous studies of ar-turmerone have shown that the compound can block activation of microglia cells. When activated, these cells cause neuroinflammation, which is associated with different neurological disorders. However, ar-turmerone's impact on the brain's capacity to self-repair was unknown.

Researchers from the Institute of Neuroscience and Medicine in Jülich, Germany, studied the effects of ar-turmerone on NSC proliferation and [differentiation](#) both in vitro and in vivo. Rat fetal NSC were cultured and grown in six different concentrations of ar-turmerone over a 72 hour period. At certain concentrations, ar-turmerone was shown to increase NSC proliferation by up to 80%, without having any impact on cell death. The [cell differentiation](#) process also accelerated in ar-turmerone-treated cells compared to untreated control cells.

To test the effects of ar-turmerone on NSC in vivo, the researchers injected adult rats with ar-turmerone. Using PET imaging and a tracer to detect proliferating cells, they found that the subventricular zone (SVZ) was wider, and the hippocampus expanded, in the brains of rats injected with ar-turmerone than in control animals. The SVZ and hippocampus are the two sites in adult mammalian brains where neurogenesis, the growth of neurons, is known to occur.

Lead author of the study, Adele Rueger, said: "While several substances have been described to promote stem cell proliferation in the brain, fewer drugs additionally promote the differentiation of stem cells into neurons, which constitutes a major goal in regenerative medicine. Our findings on aromatic turmerone take us one step closer to achieving this goal."

Ar-turmerone is the lesser-studied of two major bioactive compounds found in turmeric. The other compound is curcumin, which is well known for its anti-inflammatory and neuroprotective properties.

More information: Aromatic-turmerone induces neural stem cell proliferation in vitro and in vivo Joerg Hucklenbroich, Rebecca Klein, Bernd Neumaier, Rudolf Graf, Gereon Rudolf Fink, Michael Schroeter and Maria Adele Rueger, *Stem Cell Research & Therapy* 2014, 5:100. stemcellres.com/content/5/5/100

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