

## New research shows that stem cells are sensitive to oxygen radicals and antioxidants

Published on June 12, 2015 at 7:07 AM

Stem cells are especially sensitive to oxygen radicals and antioxidants shows new research from the group of Anu Wartiovaara in the Molecular Neurology Research Program of University of Helsinki. The research led by researcher Riikka Martikainen was published in Cell Reports -journal May 28th 2015.

Mitochondria are cellular power plants that use oxygen to produce energy. As a by-product they produce reactive oxygen. Excessive oxygen radicals may cause damage to cells but they are needed in small quantities as important cellular signaling molecules. One of their main functions is to control function of stem cells. [Antioxidants are widely used](#) to block the damage caused by reactive oxygen. To enhance their effect some new antioxidants are targeted to accumulate into mitochondria.

The current research showed that a small increase in oxygen radicals did not directly lead to cellular damage but disrupted intracellular signaling in stem cells and lead to decrease in their stemness properties. Treatment with antioxidants was able to improve the stemness properties in these cells. However, surprisingly, the researchers found that an antioxidant targeted to mitochondria showed dose-dependent toxic effects especially on neural stem cells.

The use of antioxidants as dietary supplements is common, but little is known of their effects on stem cells. This new research shows that large doses of antioxidants may be harmful to neural stem cells. Additional research on stem cells should be done to assess safety of mitochondria targeted antioxidants.

---

Source:  
University of Helsinki

---