

28 November 2008

By: Dan Talpalariu, Science Editor



Heavy isotopes may counter the aging effect of free radicals  
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## [Anti-Aging Elixir Possibly Discovered](#)

*Heavy water and the isotope effect could counter free radicals' aging factors*

More in-depth research on the impact of free radicals and isotopes on aging performed by Russian biochemist Mikhail Shchepinov provided the grounds for a company called Retrotope, formed in collaboration with other heavy-weight scientists, that aims to find a way to **slow down aging**. Special heavy water could be the answer sought by mankind since its earliest of times, as it may already have proved to extend the lives of fruit flies by 30%.

One of the leading theories in aging states that it is caused by the impact of free radicals on the body's biomolecules. They are atoms, molecules or ions with highly-reactive unpaired electrons. They are always on the lookout for electrons that would supplement their lack. While extracting an electron from an item, it leaves that item with an uneven number of electrons, creating another free radical in turn. This process happens in our bodies too, as a natural by-product of the metabolic process, causing cancer, Alzheimer, Parkinson, diabetes or renal diseases. Their influence is balanced by antioxidants (like vitamins or enzymes) up to a point where they themselves fall victim to the radicals. Shchepinov thinks he has found an alternate way to counteract the malign effect by providing molecules with heavy isotopes (deuterium, carbon-13) which slow down the negative chemical reactions (a process called the isotope effect). Deuterium (a hydrogen isotope with an atomic mass of 2 instead of 1) is part of heavy water (D<sub>2</sub>O - a quantity of heavy water would sink in normal one). The research demonstrated that a large amount of the heavy isotope carbon-13 is in fact passed from mothers to babies, possibly in nature's attempt to protect the new individual against free radical attacks. Retrotope found that small amounts of heavy water are not harmful (the body can safely convert 20% of its water into heavy water in time). On the contrary, the studies on fruit flies showed that this extended their lives by up to 30%. But a better way for the isotopes to reach the exact chemical bonds that they need to protect is the iFood that Shchepinov envisions - feeding farm animals heavy isotopes in harmless amounts, eating products derived from them (meat, milk or eggs), and letting natural assimilation and metabolism follow their course. The main criticism of his idea involves the fact that free radicals are just one of the theorized factors that cause aging and perhaps there are a lot more aspects to take into consideration. But even if proved wrong, the initiative could still yield breakthrough results in fields like medicine (from drug discovery to treating illnesses), cosmetics, electronics or plastics.