

# Meat and two neutrons -- the key to a longer life

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Indulging in an isotope-enhanced steak or chicken fillet every now and again could add as much as 10 years to your life. Scientists have shown for the first time that food enriched with natural isotopes builds bodily components that are more resistant to the processes of ageing. The concept has been demonstrated in worms and researchers hope that the same concept can help extend human life and reduce the risk of cancer and other diseases of ageing, reports Marina Murphy in *Chemistry & Industry*, the magazine of the SCI.

A team led by Mikhail Shchepinov, formerly of Oxford University, fed nematode worms nutrients reinforced with natural isotopes (naturally occurring atomic variations of elements). In initial experiments, worms' life spans were extended by 10%, which, with humans expected to routinely coast close to the centenary, could add a further 10 years to human life.

Food enhanced with isotopes is thought to produce bodily constituents and DNA more resistant to detrimental processes, like free radical attack. The isotopes replace atoms in susceptible bonds making these bonds stronger. 'Because these bonds are so much more stable, it should be possible to slow down the process of oxidation and ageing,' Shchepinov says.

The isotopes could be used in animal feed so that humans could get the "age-defying" isotopes indirectly in steaks or chicken fillets, for example, rather than eating chemically enhanced products themselves.

Shchepinov says an occasional top-up would be sufficient to have a beneficial effect.

Ageing experts are impressed with the isotopic approach. Aubrey de Grey, the Cambridge-based gerontologist, says it could be very relevant to the rates of several chemical and enzymatic processes relevant to ageing 'It is a highly novel idea,' he says. 'But it remains to be seen whether it can be the source of practicable therapies, but it is a prospect that certainly cannot be ruled out.'

Charles Cantor, a professor of biomechanical engineering at Boston University, said: 'Preliminary data indicates that this approach can potentially increase lifespan without adverse side effects. If this is borne out by further experiments the implications are profound.'

Isotopes could also be used in pet food or as a means to protect workers or soldiers from radiation. Deuterium, a natural isotope of hydrogen (with 2 protons rather than one) could be used routinely.

Previous successes in extending lifespan have involved withdrawing food to the point of near starvation, a process called caloric restriction.

Source: Society of Chemical Industry

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