

Drug find turns ageing into thing of the past

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September 14 2019, 12:01am, The Times



Researchers managed to take an average of two and a half years off their subjects' biological age MIKE BLAKE/REUTERS

A cocktail of drugs has been found to reverse a critical element of the ageing process for the first time.

Scientists said a clinical trial, carried out at Stanford University in California, suggested that growing old could one day become a treatable condition.

The study involved nine men aged 51 to 65 who took three existing drugs — a growth hormone and two diabetes medicines — for one year. The drugs appeared to alter chemical compounds attached to their DNA, reversing changes that accumulate over time.

The effect was equivalent to taking an average of two and a half years off their biological age, the researchers said. The subjects' defences against infection and cancer also appeared to be boosted.

Steve Horvath, of the University of California, Los Angeles, said: "I was very surprised. I did not think it was possible to find age reversal. Our study is only a first step that demonstrates feasibility, but it suggests that a cocktail of relatively safe substances can already achieve what appeared to be a distant dream from science fiction novels."

The work focuses on "epigenetic" changes inside cells, which involve chemicals that latch on to portions of DNA. These act like switches, controlling the activity of individual genes.

Epigenetic changes that accumulate with age appear to make people more vulnerable to diseases such as cancer.

Professor Horvath has developed techniques that can assess a person's epigenetic status to predict with a high degree of accuracy how old they are and how long they have to live. People who smoke, for instance, are likely to be substantially older in epigenetic terms than their chronological age.

The main aim of the trial, which was carried out at the Stanford medical centre in California, was to rejuvenate the thymus gland, which plays an important role in fighting infection.

It was already thought that growth hormone could stimulate thymus regeneration but it can also promote diabetes, so the cocktail of drugs used in the trial included two widely used anti-diabetic medicines, dehydroepiandrosterone (DHEA) and metformin. The reversal of the ageing process was discovered as a side-effect.

Gregory Fahy, lead author of a study published in the journal *Aging Cell*, said: "The implication is that ageing may be a treatable condition."

Professor Horvath said: "Our study results strongly suggest that these subjects are in a better shape to fight off infections because their thymus and immune system were in much better shape than before. The treatment actually lowered the risk of cancer."

The researchers stress that the study was small and with no placebo control arm. A trial with 100 subjects is planned.