**Is LITHIUM the cure for ageing? Tests reveal the drug can boost lifespan by almost a fifth**

* **Scientists extended longevity in fruit flies by giving them lithium chloride**
* **They discovered a potential new drug target - an enzyme called GSK-3**
* **Blocking GSK-3 boosted the insects' lifespan by an average of 16 per cent**
* **As the same pathways are found across species, the approach could extend lifespans in other animals, even humans, say the researchers**

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Slowing the ravages of age and extending life have been obsessions of mankind for thousands of years.

But researchers have shown that a drug used to treat depression and bipolar disorder may hold the key to finally turning the tide in our favour.

The scientists found lithium chloride can extend the lives of fruit flies by as much as much as 16 per cent, offering hope that the findings could translate to other animals, including humans.

Lithium chloride has been used in mental health treatment to balance mood.

Exactly how it works to stabilise mood is poorly understood, but it has found a new application in ageing research.

Scientists at University College London investigating healthy ageing discovered that when given to fruit flies in low doses it extended their longevity by almost one fifth.

Research into healthy ageing is becoming increasingly important as people generally live longer.

The goal is not just to extend life, but to extend the number of years people are able to live free of disease and chronic conditions which plague old age.

'To improve our quality and length of life we must delay the onset of age-related diseases by extending the healthiest period of our lives,' explained Dr Jorge Iván Castillo-Quan, previously at UCL Institute of Healthy Ageing, now at Harvard Medical School.

'Identifying a drug target for ageing is a crucial step in achieving this and by targeting GSK-3, we could discover new ways of controlling the ageing process in mammals, including humans.'

The team found that lithium chloride delays ageing by blocking GSK-3 and activating another molecule called NRF-2, which is found in worms, flies and mammals and which plays a key role in defending cells against damage.

Different doses of lithium chloride were given to 160 adult flies to measure the effect on lifespan, measured against a control group which received sodium chloride.

Higher doses of the drug reduced the flies' lifespan, but lower doses prolonged life by an average of 16 per cent and by as much as 18 per cent.

The findings are published in the journal Cell Reports, and show that both male and female flies live longer than average when given low doses of lithium during adulthood or later in life.

What's more, the effect was seen regardless of the flies' genetic make-up.

Few side effects were seen in the flies when they received lower doses, and they continued to feed normally and produce healthy offspring.

The benefits of the drug were also seen when it was used irregularly, or as a one-off treatment.

Flies which received a one-off dose of lithium chloride near the end of their lives lived up to 13 per cent longer.

While young flies given low doses for 15 days, before switching to a control for the remainder of their lives, also lived longer.

'We found low doses not only prolong life but also shield the body from stress and block fat production for flies on a high sugar diet,' explained Dr Ivana Bjedov from the UCL Cancer Institute and co-author of the study.

What's more, the drug also showed protective effects against cell damage from toxic sources.

'Low doses also protect against the harmful effects of higher, toxic doses of lithium and other substances such as the pesticide paraquat,' said Dr Bjedov.

According to the group, the aim of the research is to find ways to interrupt the ageing process so we can live disease free for longer, and reduce the period at the end of life when our bodies are plagued by wear and tear and disease.

Researchers around the world are continuing to study the decline in our cells and tissues associated with ageing, and are exploring the effects of diet, genetics and drugs.

Principal investigator, Professor Dame Linda Partridge, director of the UCL Institute of Healthy Ageing and the Max Planck Institute for Biology of Ageing, said: 'The response we've seen in flies to low doses of lithium is very encouraging and our next step is to look at targeting GSK-3 in more complex animals with the aim of eventually developing a drug regime to test in humans.'

Read more: <http://www.dailymail.co.uk/sciencetech/article-3526695/Is-LITHIUM-cure-ageing-Tests-reveal-drug-boost-lifespan-fifth.html#ixzz4BkkfvDLO>   
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