

Compound could halt mesothelioma

June 16 2015, by Fran Molloy



Asbestos in older homes is causing a new wave of lung disease among renovators. Credit: Thinkstock

Research into a treatment for asbestosis and mesothelioma is showing promising results, and has real potential to short-circuit the progression of the disease, says a Sydney microbiologist.

Associate Professor Tony George and his co-researchers have discovered a compound they hope will be developed into a puffer-administered medication to treat the growing number of Australians diagnosed with incurable [asbestos](#)-related lung disease.

The team has found that the compound stopped the development of [mesothelioma](#) tumours in 60-80 per cent of asbestos-exposed mice in 30-week laboratory trials.

In earlier experiments on human lung cell cultures it was effective in preventing a cascade of events typically triggered by the presence of [asbestos fibres](#), such as a rise in harmful oxygen radical levels.

At a genetic level, the compound short-circuits the pathways to cell death typically caused by asbestos fibres, says Dr George, of the *ithree* institute at the University of Technology, Sydney (UTS).

"We think the compound could be used through a puffer or a nebuliser, just like those used with asthma, where it could either prevent the fibres taking hold in people exposed to asbestos, or improve the condition for people suffering now," he says.

Mesothelioma is an aggressive, incurable cancer in the lung lining, caused by exposure to asbestos fibres. It can take 20 to 50 years after exposure to appear.

Asbestos fibres lodged in the lung can't be removed and typically cause inflammation of the pleural lung lining. Over time, tumours develop in the deeper mesothelium layer.

After two years of cellular-level laboratory work, the team conducted trials with the compound on mice bred for susceptibility to mesothelioma.

The trials showed that the immune-suppression typical in asbestos exposure was overcome by the compound, allowing the body's defence system to start to act against the asbestos fibres.

The compound seemed also to have a preventive effect.

Dr George and his team have applied for a patent on the compound. They are working with SPARK Sydney mentors with hopes that a pharmaceutical company will turn a product around in the next five years.

SPARK Sydney director Professor Michael Wallach says the program emulates a successful Stanford Medical School model and aims to get research benefits to patients more effectively.

"We selected Dr George's project because it satisfies an important, unmet need and we think in two years, with our support and mentoring, he should be able to get to a proof of concept that will be taken up by a pharmaceutical company."

Molecular biology research can take decades to move from discovery to cure.

However, mesothelioma patients don't have decades – most have only months, says Theodora Ahilas, who has become intricately familiar with the disease and its impacts after 24 years as an asbestos compensation lawyer.

"People who are diagnosed with these diseases need to have something that gives them hope. They need to know that there is some treatment which will give them a longer life expectancy and some quality of life."

The average lifespan after diagnosis is about nine months; even the most

rigorous chemotherapy is able to extend average life expectancy by only three months. Dr George says there is potential for the new compound to complement chemotherapy.

Australia has the world's second highest rate of mesothelioma. Safe Work Australia figures show about 700 people in Australia die from mesothelioma or asbestosis annually. Mesothelioma rates have climbed since the 1960s, initially from those exposed in mining and manufacturing. A new wave of mesothelioma cases is now becoming evident among home renovators, both men and women.

Ahilas says people may be exposed to asbestos in home renovations today and go on to develop mesothelioma in 30 years' time, making it critical that better treatments are developed.

"There's a difference between being diagnosed with a disease which robs you of your life in three to six months and a disease which gives you five to 10 years."

Provided by University of Technology, Sydney

Citation: Compound could halt mesothelioma (2015, June 16) retrieved 11 May 2024 from <https://medicalxpress.com/news/2015-06-compound-halt-mesothelioma.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--