NTU finds new treatment options for colon cancer

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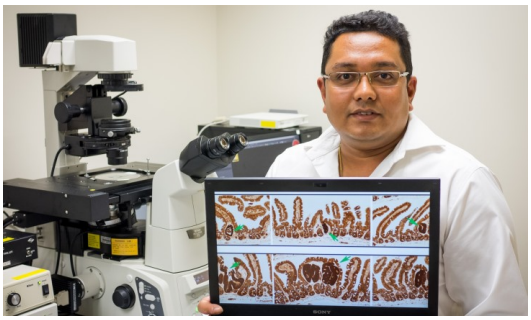
Existing chemo drug reduced colon tumour growth by half



Scientists from Nanyang Technological University (NTU) and Sweden's Karolinska Institutet, one of Europe's largest and most prestigious medical universities, have discovered that an existing chemotherapy drug used to treat leukaemia could prevent and control the growth of colorectal tumours.

Colorectal cancer commonly referred to as colon cancer is one of the three most common cancers worldwide and the most common in Singapore. Almost 95 per cent of colorectal cancers are from malignant tumours.

The research team found that ***Imatinib***, an enzyme blocker widely used to treat leukaemia, works by blocking a signalling pathway related to a group of cell receptors called *EphB*. This means that when used to treat mice with colon tumours, it was able to halve the growth of tumours in the intestines.

The finding is also significant as currently there is no drug available to prevent the recurrence of tumours in the intestine after the cancerous tumours have been removed by surgery.

One of the two principal investigators in the team of 13 international scientists was Prof **Sven Pettersson**, Professor of Metabolic Disease at NTU's Lee Kong Chian School of Medicine and senior principal investigator with the National Cancer Centre Singapore.

This discovery was published today in the prestigious academic journal Science Translational Medicine.

"Our work has important clinical implications, since *Imatinib* is a potentially novel drug for the treatment of tumour formation and cancer progression in patients predisposed to develop colorectal cancer," said Prof Pettersson, who is also a Professor of Host-Microbe Interactions at Karolinska Institutet.

Dr **Parag Kundu**, a senior research fellow with Prof Pettersson's lab and the first author of the study, said that in their tests, Imatinib was able to block tumour initiation at the stem cell level by half and significantly reduced tumour growth and proliferation.

"In mice which mimicked human colon cancer, *Imatinib* was shown to prolong their life span," Dr Kundu said. "The drug was also effective in increasing the survival of mice which had late-stage tumours and rectal bleeding."

The same effects were also shown when *Imatinib* was tested on colon tumour tissues taken from human patients.

Colon cancer usually develops first as benign tumours, which when left untreated turn aggressive, and may spread to other parts of the body. The main treatment in the early stages of colon cancer is through resection, where the affected section of the intestine is removed through surgery.

The scientists said these findings also suggest that short term intermittent chemotherapies could be possible as a treatment model, as this would substantially reduce the side effects known to occur when *Imantinib* is given for longer periods.

"Our findings provide experimental evidence that Imatinib treatment did not interfere with the tumour suppressor function of EphB receptors," said Jonas Frisén, Professor of Stem Cell Research at Karolinska Institutet, who co-supervised the study."

This is beneficial as *EphB* receptors also function to keep the tumour intact, which prevents cancerous cells from spreading to surrounding tissue should the tumour break apart.

The multidisciplinary study was conducted over a period of five years, at both NTU and the Karolinska Institutet.

It is supported by NTU's Lee Kong Chian School of Medicine, the Singapore Millennium Foundation, the National Cancer Centre Singapore, the Swedish Research Council, the Swedish Cancer Society, Karolinska Institutet, the Tobias Foundation, the Knut and Alice Wallenberg Foundation and the Torsten Söderberg Foundation.

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About Nanyang Technological University

A research-intensive public university, Nanyang Technological University (NTU) has 33,000 undergraduate and postgraduate students in the colleges of Engineering, Business, Science, Humanities, Arts, & Social Sciences, and its Interdisciplinary Graduate School. It has a new medical school, the Lee Kong Chian School of Medicine, set up jointly with Imperial College London.

NTU is also home to world-class autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies, Earth Observatory of Singapore, and Singapore Centre on Environmental Life Sciences Engineering – and various leading research centres such as the Nanyang Environment & Water Research Institute (NEWRI), Energy Research Institute @ NTU (ERI@N) and the Institute on Asian Consumer Insight (ACI).

A fast-growing university with an international outlook, NTU is putting its global stamp on Five Peaks of Excellence: Sustainable Earth, Future Healthcare, New Media, New Silk Road, and Innovation Asia.

The University's main Yunnan Garden campus has been named one of the Top 15 Most Beautiful in the World. NTU also has a campus in Novena, Singapore's medical district.

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