

New drug target & promising chemical starting point for treating cancer, type 2 diabetes

EXECUTIVE SUMMARY

A new therapeutic strategy that identifies a new drug target and development of various promising small molecules that show promising results in animal testing to be further developed into drugs for treatment of cancer and type II diabetes.

BACKGROUND

PI3-kinase (PI3K) pathway is a crucial set of reactions that occurs at the cellular level. Misregulation of this pathway plays an important role in causing cancer and type II diabetes and hence offers promising targets for developing drugs to combat these diseases. Conventional therapeutic strategies have targeted inhibiting downstream targets in this pathway, and have not concentrated on targeting protein-lipid interactions.

TECHNOLOGY DESCRIPTION

Our technology looks at identifying a new strategy and potential drug molecules that target lipid-protein interactions (PIP3/protein binding) as a therapeutic tactic. We have also developed promising chemical leads (small molecule antagonists for PIP3/protein binding) – which inhibit cancer cell survival, resulting in significant antitumor activity *in vivo* as well as a set of small molecule non-lipid antagonists of lipid-protein interactions, which can be used to design specific drugs

MARKET POTENTIAL

- The world targeted cancer drug market is predicted to reach \$51 billion by 2015*
- The combined market globally for diabetes type 2 diagnostics and therapeutics has been

predicted to reach \$242 billion by the year 2013 at a growth rate of 2.5% a year[^]

*<http://www.thepharmaletter.com/file/45882/targeted-cancer-drug-market-set-to-reach-51-billion-by-2015-led-by-pfizer-barriers-to-use-of-oral-cancer-drugs-identified.html> -viewed 16/05/11, ^<http://www.bccresearch.com/report/diabetes-therapies-diagnostics-hlc029b.html> -viewed 19/05/11

VALUE/ADVANTAGES

- Can selectively inhibit PIP3-mediated signaling
- Found to be able to target a wide range of PIP3-dependent signaling events *in vitro*
- Significant anti-tumour activity *in vivo*
- Exhibit improved activity /PH domain selectivity compared to previously identified antagonists
- Promising chemical starting points that have been optimized, that have undergone successful animal trials

APPLICATIONS

- New therapeutic strategies and development of small molecules that can serve as promising chemical leads in developing new drugs for the treatment of cancer and type II diabetes

TECHNOLOGY STATUS

- Demonstrated at the lab scale (animal studies conducted using the small molecules developed – with promising results; various small molecules have been tested and optimized)
- On the lookout for potential partners for spin-off and licensing (This technology was jointly developed by NCL, Pune and Tufts University, USA)
- Patent application filed- US

