

A library of new small molecules that could be used as anticancer, antiviral drugs

EXECUTIVE SUMMARY

A synthetic routine that allows one to manipulate the substrate flexibility at the final/penultimate steps- yielding a small library of modified nucleosides without the need for synthesising every compound from the beginning, and hence significantly reducing drug development time and costs.

BACKGROUND

Nucleosides are compounds containing a purine or pyrimidine base linked to a sugar. A recent modification strategy involves spiroannulation of sugar backbone in nucleosides and having access to collections of distinctive small molecules (analogues) by modifying the sugar backbone, is important for identifying new therapeutic candidates for various viral diseases and cancer. Current schemes follow “one scheme one nucleoside” approach – which is very limiting as each modification has to be done separately.

TECHNOLOGY DESCRIPTION

NCL's technology provides a strategy that allows synthesizing spiro-nucleosides with enormous flexibility to modulate the substituents and properties of the resulting compounds at the final/penultimate steps. The provision to manipulate the substrate flexibility allows this approach to yield a small library of modified nucleosides without synthesizing every compound from the beginning.

MARKET POTENTIAL

- There are large R&D efforts underway worldwide to identify suitable anti-cancer and anti-viral drugs/agents
- The global cancer therapeutics market is relying heavily on new drug development and is expected to reach \$60.6 billion in 2011*
- The antiviral drug market for 2008 was valued to have been at \$20 billion**

* <http://www.frost.com>; ** www.leaddiscovery.co.uk

VALUE/ADVANTAGES

- Cycloaddition process used is of high synthetic efficiency
- These libraries significantly reduce drug development time and efforts
- Good yield in the presence of the recommended catalysts
- Easy and flexible penultimate bicycloannulation step involved

APPLICATIONS

- Drug discovery
- Developing therapeutics for various diseases, genetic disorders and infections
- Anti viral and anti cancer agents
- Chemical genetics
- Identifying new drug candidates

TECHNOLOGY STATUS

- Demonstrated at the lab scale
- Ready to be licensed
- Patent application filed: Indian #- 3103/DEL/2010
- Ramana, C.V. et al. (2011), Tetrahedron Letters, Vol 52 (1), Pg 38-41 ([link](#))