NRC·CNRC

Peptides against cancer

(L-11627/11964)

Highlights

Angiogenesis is essential for the growth and progression of malignant tumors, and is used as an indicator of the degree of malignancy. Restricting the supply of blood to tumours by inhibiting angiogenesis has emerged as an innovative strategy to control both tumor growth and metastasis. Current anti-angiogenic drugs have targeted single stimulators involved in this multifactorial process, but are not sufficient to significantly reduce tumor burden and prolong life.

NRC has developed peptides with novel anti-angiogenic properties that are effective against many different stimulators of angiogenesis. The NRC peptides exhibit direct anti-tumorogenic properties against different types of tumors and have been validated *in vivo*. The anti-angiogenic activity against multiple stimulators, combined with the direct inhibition of tumour growth, position these peptides as promising treatments against malignant tumours.

Technology transfer

- A commercial exploitation license for the technology
- Development of this technology through a joint collaboration

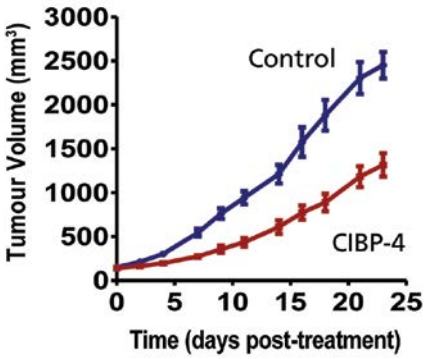
Market applications

- Treatment of malignant tumours in a variety of cancers

How it works

Anti-angiogenic agents have some advantages over conventional anti-cancer therapies: direct accessibility from the circulation and low rate of drug resistance due to the genetic stability of endothelial cells. While preclinical trials of angiogenic inhibitors have been promising, showing partial or complete tumor regression without drug resistance, clinical studies have only shown the stabilization of tumour growth with little to no regression. This is because advanced-stage tumors have already activated various signaling pathways that allow them to easily override the angiogenic restrictions of one inhibitor.

The NRC's peptides inhibit the angiogenic responses induced by a number of growth factors including IGF-I, VEGF, PlGF, bFGF and S100A4. In addition, the peptides exhibit direct anti-tumorogenic properties against different types of tumors. The NRC has demonstrated that the anti-angiogenic and anti-tumorigenic activity is predominantly located in the C-terminal sequence of the protein and is in part mediated by inhibition of intracellular cathepsin B and L activities in endothelial/tumoral cells. The anti-tumorigenic efficacy of the peptide has been validated *in vivo* using a subcutaneous xenograft glioblastoma mouse model.



Benefits

- Potent pleiotropic inhibitory action against diverse stimulators of angiogenesis, as opposed to just one
- Potent, angiogenesis-independent, antitumorigenic action
- Novel mechanism of action on an enzymatic pathway involved in both angiogenesis and tumorigenesis
- Proof of concept validated *in vivo*

Patents

NRC file 11627: Patents pending in the US, Canada, and Europe.

NRC file 11964: Patents granted in Europe, pending in the US and Canada.

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NR16-174/2017E-PDF
ISBN 978-0-660-23958-3 PDF
ISBN 978-0-660-23959-0 PAPER

December 2017