

Korea University Industrial & Cooperation Foundation

Title (Name of Technology)

Use of Inhibitors of Leukotriene B4 Receptor BLT2 for Treating Human Cancers



Executive Summary

Dr. Jae-Hong Kim, a professor of Korea University, is practicing researches focusing on signal system of eicosanoids in particular, functions and signal system of Leukotriene B4, has finally developed novel use of inhibitors of leukotriene B4 receptor BLT2 for treating human cancers such as bladder, prostate, pancreatic, and breast cancer and so on.

His research and development results are very interesting in terms of efficacy, safety and commercializing potential.

The Industry-University Cooperation Foundation Korea University, a Technology Licensing Organization in Korea University, intends to enter into a technology transfer or licensing transaction with regard to treating human cancers Terms of the transaction are not set, and interested parties may further discuss the details if they wish to enter into an agreement.

Industry Sector:
 Academic/Research: Pharmaceutical

③ Therapeutic Target: Oncology: Cancer

④ Development phase: early stage

(5) Type of business relationship sought (including licensing availability): technology transfer, or non-exclusive or exclusive licensing agreement

Key Technology Highlights

□ Singificant use as a target for treating human cancers

BLT2 inhibition leads to enhanced apoptosis in human cancer cells and also to suppressed metastasis of human cancer cells. Additionally, BLT2 inhibition exhibits greatly increased efficacies compared with well-known carcinostatis substances. In other words, a combination of a substance that inhibits the expression or intracellular signaling of BLT2, and other anti-cancer drugs for the manufacture of a medicament causes a synergistic apoptosis of human cancer cells. The overexpressed BLT2 and its over-activated signaling play critical roles in mediating the tumorigenesis. Thus, the strategy targeting BLT2 overexpression or over-activation as a way for developing therapeutic composition against human cancer.

BLT2 inhibition shows remarkable use as therapeutic agents against various human cancers such as bladder cancer, breast cancer, prostate cancer, pancreatic cancer, brain cancer, skin cancer, and liver cancer, BLT2 highly overexpressed compared to normal tissues which express a minimal amount of BLT2. And this results were verified in animal experiments using mice and rabbits.

□ Plentiful Animal Data

Many animal data for activities as inhibitors of leukotriene B4 receptor BLT2 for treating human cancers have been already obtained, permitting the speed of the product development to increase.

Application for treating human cancers

BLT2 has an important role in treating a cancer over-expressing BLT2 protein or oncogenic Ras and the human cancer selected from the group consisting of bladder cancer, breast cancer, prostate cancer, pancreatic cancer, brain cancer, skin cancer, and liver cancer.

■ IP Owner Summary

Korea University Industrial & Cooperation Foundation

TLO in Korea University

Personal Description of Researcher

- Name
 - Jae-Hong Kim, Ph.D
- Present Position
 Professor

College of life sciences and

biotechnology, Korea University

Office address

Division of life sciences and

biotechnology, Korea University

Seoul, Korea



Technology Overview

Technology Platform

The core technology of Korea University is to provide promising use as inhibitors of leukotriene B4 receptor BLT2 for treating human cancers. With the technology platform, they succeeded in developing inhibitors of leukotriene B4 receptor BLT2 for treating human cancers.

Background and unmet needs: Most studies of Leukotriene B₄ (LTB₄) receptors have focused on BLT1, which is expressed exclusively in inflammatory cells such as leukocytes, and plays a role in inflammatory processes. And no clear physiological function has yet been identified for BLT2. In particular, the role of BLT2 in malignant transformation remains to be elucidated.

And a multitue of approaches and researches have been made to prevent and treat human cancers, such as bladde r, prostate, pancreatic, and breast cancer and so on but have difficulty in find effective carcinostatis substance.

Discovery and Achievements: In considering shortcomings associated with current a pharmaceutical composition and a method for treating human cancer, we are urged to conclude that our 'inhibitors of leukotriene B4 receptor BLT2' takes a giant step to control cancers.

We discovered that the role of BLT2 as a survival factor of human cancers, such as bladder, prostate, pancreatic, a nd breast cancer and found that the BLT2 inhibitors can be used as anti-cancer drugs. Our results showed BLT2 has an impor tant role in metastasis of cancer cells and angiogenesis of tumor and demonstrated that the anti-cancer activity of the BLT2 in hibitors is accomplished by inducing the apoptosis of cancer cells, inhibiting the metastasis of cancer cells, or inhibiting the an giogenesis of tumor.

Fig. 1. BLT2 antagonist extends the survival of mouse injected with Ras-cancer cells



BLT2 antagonist extends the survival of mouse injected with Ras-oncogene expressing transformed cells. The mortality of mice injected with Rat2-HO6 cells is attenuated by inhibition of BLT2 signaling according to the Kaplan-Meier survival analysis.



Fig. 2. BLT2 antagonist suppresses VEGF-induced angiogenesis



Key features and advantages:

(a) Significantly increased efficacies

- (1) inducing apoptosis of cancer cells,
- (2) suppressing metastatic potential of cancer cells,
- (3) blocking angiogenesis of cancer cells.

(4) a novel strategy for screeing BLT2 signaling inhibitors by measuring the cell growth of Rat2-BLT2 stable cells.

(5) the novel observation of BLT2 overexpression in various human cancers, which is a critical phenomena in tumorigenesis.

(b) Little or no side effects

A pharmaceutical composition comprising BLT2 Inhibitors and a method using BLT2 inhibitors act exclusively on oncogene, in particular Ras oncogene and inhibit only growth of oncogene.

Patents and Publications

Korea Univerity have patents issued or filed for application in many countries with regard to BLT2 Inhibitors.

TABLE. List of Patents for Anti-Obesity Agents

Country	Status	Patent, Publication or Appln. No.
USA	Filed	60/896,499
USA	Filed	60/896,504
PCT	Published	PCT/KR2008/001649
PCT	Published	PCT/KR2008/001650