

PLANT-DERIVED COMPOUNDS FOR THE TREATMENT OF RETROVIRAL DISEASES

SUMMARY

The National Cancer Institute's Urologic Oncology Branch seeks partners interested in licensing or collaborative research to co-develop methods for the treatment of HIV-1/AIDS and other retroviral diseases using epoxy-guaiane derivatives.

REFERENCE NUMBER

E-201-2012

PRODUCT TYPE

- Therapeutics

KEYWORDS

- T lymphocytopenia
- HTLV
- leukemia
- lymphoma
- HIV-1
- AIDS
- retroviral
- epoxy-guaiane derivatives
- Englerin

COLLABORATION OPPORTUNITY

This invention is available for licensing and co-development.

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DESCRIPTION OF TECHNOLOGY

NIH Researchers have identified Englerin A and its derivatives as potent and specific activators of viral replication in infected T cells (with a decrease of about 70% of activated T-reg population following *ex-vivo* PBMCs treatment). Use of these compounds in conjunction with existing antiviral therapies has been described for the treatment of AIDS, adult T cell leukemia/lymphoma and other retroviral diseases. Intellectual property assets available for license include novel compositions of Englerin A along with

methods of their use in the treatment of retroviral diseases. Collaborative opportunities are for the development of the therapeutic and validation at and beyond preclinical animal studies.

POTENTIAL COMMERCIAL APPLICATIONS

- Novel adjuvant therapy for the treatment of retroviral diseases such as AIDS or HTLV-induced leukemia/lymphoma.
- Therapeutic for the management of T lymphocytopenia.

COMPETITIVE ADVANTAGES

- Englerin A and its derivatives are potent and selective activator of protein kinase C theta in immune cells.
- Compounds are anticipated to have fewer off-target toxicities relative to currently available PKC activators (e.g., interleukins-2 and 7).
- Compounds are optimized for use in combination with clinically available antiviral agents.

INVENTOR(S)

[Leonard Neckers](#) (NCI)

DEVELOPMENT STAGE

- Pre-clinical (in vivo)

PUBLICATIONS

Ratnayake R, et al. Englerin A, a selective inhibitor of renal cancer cell growth, from *Phyllanthus engleri*. *Org Lett*. 2009 Jan 1;11(1):57-60. [[PMID 19061394](#)]; Li Z et al. A brief synthesis of (-)-englerin A. *J Am Chem Soc*. 2011 May 4;133(17):6553-6. [[PMID 21476574](#)]; Akee R, et al. Chlorinated englerins with selective inhibition of renal cancer cell growth. *J Nat Prod*. 2012 Mar23;75(3):459-63. [[PMID 22280462](#)]; Sourbier C, et al. Englerin A stimulates PKC ϵ to inhibit insulin signaling and to simultaneously activate HSF1: pharmacologically induced synthetic lethality. *Cancer Cell*. 2013 Feb 11;23(2):228-37. [[PMID: 23352416](#)]

PATENT STATUS

- **U.S. Filed:** US Application No. 61/726,975 on 11/15/2012
- **Foreign Filed:** Chinese Patent Application No. 201380070484.0 filed July 15, 2015

RELATED TECHNOLOGIES

- [E-064-2008 - Cancer Inhibitors Isolated from an African Plant](#)
- [E-042-2012 - Diabetes, Obesity, and Other Insulin-Related Diseases](#)

THERAPEUTIC AREA

- Immune System and Inflammation