



## TREATING HYPERTENSION USING ERYTHROPOIETIN AND ITS DERIVATIVES

### SUMMARY

The Laboratory of Cardiovascular Science at the National Institute on Aging, is seeking parties interested in collaborative research to further co-develop a potential new hypertensive drug based on recombinant human erythropoietin (rhEPO).

### REFERENCE NUMBER

E-158-2012

### PRODUCT TYPE

- Therapeutics

### KEYWORDS

- Hypertension
- Chronic renal failure
- Anemia
- Vasodilatation
- Cardioprotection
- Red blood cell production
- Hemodynamic effects.

### COLLABORATION OPPORTUNITY

This invention is available for licensing.

### CONTACT

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### DESCRIPTION OF TECHNOLOGY

Erythropoietin (EPO), a natural hormone produced by kidneys is associated with stimulation of red blood cell production. Recombinant human erythropoietin (rhEPO) is currently used for treatment of anemia and has powerful cardioprotective properties. Hypertension remains a major health problem and a serious risk factor for stroke and chronic heart failure. Researchers at the NIH have discovered that administering a therapeutically effective dose of rhEPO or an EPO derivative including carbamylated erythropoietin (CEPO) and Helix B surface peptide (HBSP), have an acutely reducing both systolic and diastolic blood pressure, via Nitric Oxide (NO) signaling. Long-term administration of derivative of EPO,

HBSP, prevents elevation of arterial blood pressure in an animal model of hypertension. Unlike long-term treatment with rhEPO, administration of EPO derivatives, such as HBSP, does not stimulate excessive red cell production and will be useful in the development of anti-hypertensive drugs.

#### **POTENTIAL COMMERCIAL APPLICATIONS**

- Potential therapeutic for the treatment of hypertension

#### **COMPETITIVE ADVANTAGES**

- Administration of EPO and its derivatives does not stimulate excessive red blood cell production.
- Technology utilizes activation of natural vasodilatation mechanisms.
- rhEPO and EPO derivatives provide tissue-protective properties, which none of existing antihypertensive drugs do.

#### **INVENTOR(S)**

- [Mark Talan, MD, PhD](#) (NCI)

#### **DEVELOPMENT STAGE**

- Discovery (Lead Identification)

#### **PUBLICATIONS**

Ahmet I., Lakatta E.G., Talan M.I. Acute hemodynamic effects of erythropoietin do not mediate its cardioprotective properties. *Biolog Open*, 2012 in press

#### **PATENT STATUS**

- **U.S. Filed:** Provisional Applications: No. 61/636,547 (20 Apr 2012); No. 61/638,328 (25 Apr 2012); No. 61/656,698 (07 Jun 2012)
- **Foreign Filed:** Application No. PCT/US2013/03715 (18 April 2013)

#### **THERAPEUTIC AREA**

- Cardiovascular Systems