An Endogenous Anti-angiogenic Protein (EAP) and its Derivatives for Treatment of Cerebral Cavernous Malformations (CCM)

Tech ID: 27312 / UC Case 2016-214-0

BACKGROUND

Cerebral cavernous malformation (CCM) is a neurovascular disease that causes epilepsy and stroke for which there is no medical therapy. It has a prevalence of 5 per thousand in western populations and occurs in familial forms as a consequence of mutations in 3 CCM genes: CCM1/*KRIT1, CCM2, CCM3/PCDC10* resulting in the formation of CCMs; mutations in the CCM1/KRIT1 gene account for 40% of the inherited cases. Once identified, CCM patients have a lifetime risk of CCM development and progression with increasing risk of stroke, epilepsy, or neurological impairment.

TECHNOLOGY DESCRIPTION

EAP is involved in the maintenance of vascular structure and homeostasis. Researchers at UC San Diego found that upon mutation of CCM1/KRIT1 gene, EAP expression is suppressed. Replacement of EAP is a novel potential therapy for CCM disease. Moreover, recombinant fragments of EAP have been shown to be therapeutic in a mouse CCM model of the disease.

APPLICATIONS

Recombinant EAP, its analogues, or derivatives offer potential therapies to prevent CCM lesion development and progression.

ADVANTAGES

Prior studies have shown that administration of recombinant EAP and/or its analogues are feasible in animal models and one Phase I testing in humans resulted in no serious adverse reactions, demonstrating that EAP-based therapies are feasible and that ultimately small molecule orally-available agents that mimic EAP may be developed to treat these patients.

INTELLECTUAL PROPERTY INFO

A provisional patent has been submitted.

RELATED MATERIALS

▶ Lopez-Ramirez MA, Fonseca G, Zeineddine HA, Girard R, Moore T, Pham A, Cao Y, Shenkar R, de Kreuk BJ, Lagarrigue F, Lawler J, Glass CK, Awad IA, Ginsberg MH . Thrombospondin1 (TSP1) replacement prevents cerebral cavernous malformations. J Exp Med. 2017 Nov 6;214(11):3331-3346. doi: 10.1084/jem.20171178. Epub 2017 Sep 28. - 11/06/2017

PATENT STATUS

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OTHER INFORMATION

KEYWORDS
Endogenous Anti-Angiogenic protein (EAP), Cerebral cavernous malformation (CCM), epilepsy, stroke, neurovascular disease

CATEGORIZED AS
▶ **Medical**
▶ Disease: Cardiovascular and Circulatory System
▶ Therapeutics

RELATED CASES
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