

2.2.4

PubMed

Display Settings: Abstract



J Biotechnol. 2012 Mar 31;158(1-2):59-67. Epub 2012 Jan 9.

Overexpression of a modified protein from amaranth seed in Escherichia coli and effect of environmental conditions on the protein expression.

Castro-Martínez C, Luna-Suárez S, Paredes-López O.

Centro de Investigación para el Desarrollo Integral Regional, CIDIIR-IPN, Sinaloa, Mexico.

Abstract

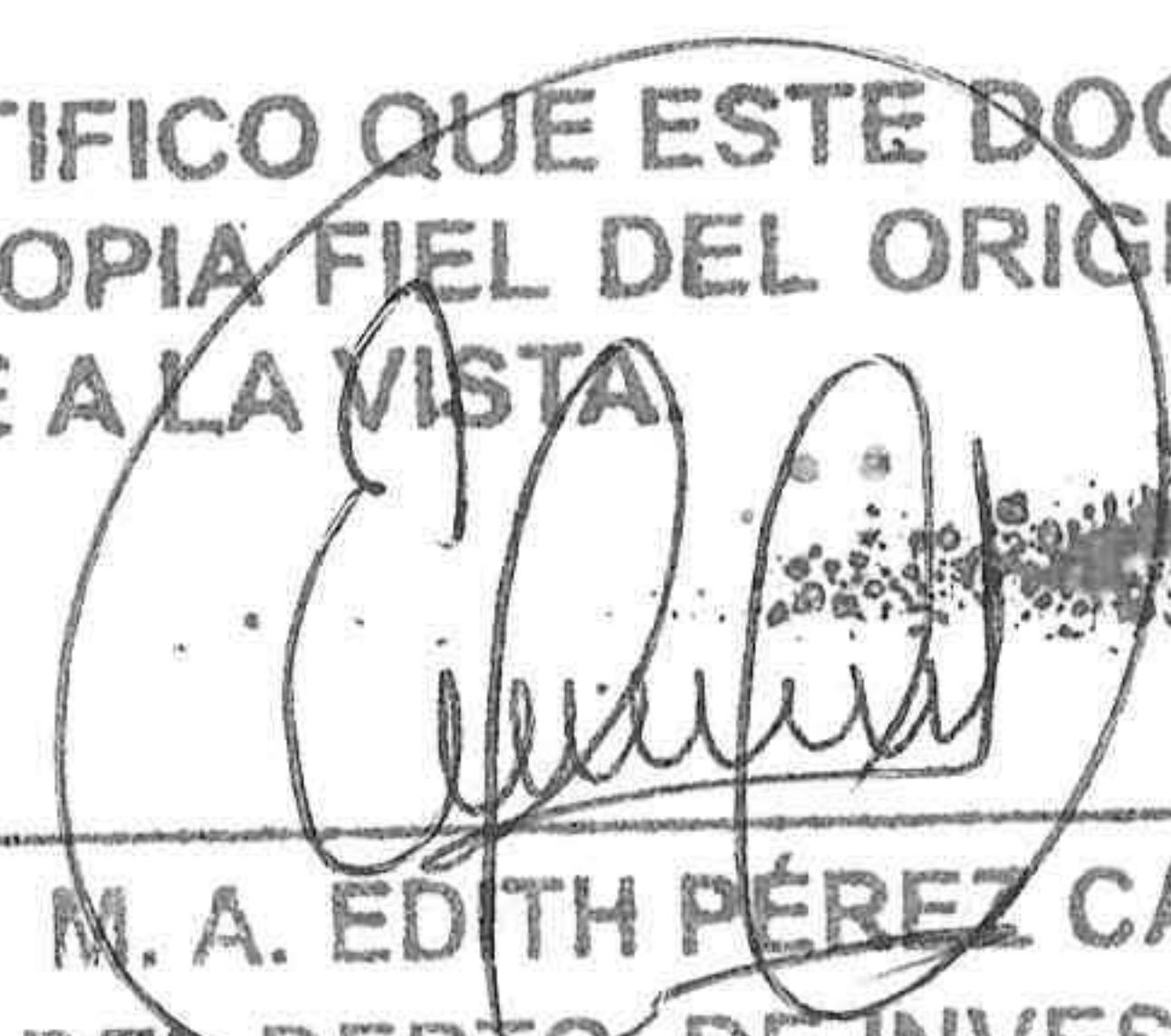
Amaranth seeds are considered as an excellent complementary source of food protein due to their balanced amino acid composition. Amarantin acidic subunit has the potential as a functional and nutraceutical protein, and it is structurally a good candidate for modification. The aim of this work was to improve its functionality, then the primary structure was modified into the third variable region of 11S globulins, by inserting antihypertensive peptides: four Val-Tyr in tandem and Arg-Ile-Pro-Pro in the C-terminal region. Modified protein was expressed in Escherichia coli Origami (DE3) and was purified. The culture conditions, including the culture media, temperature, agitation speed and air flow were tested in order to obtain an increased expression levels of the modified protein. A 2(3) factorial design was used for evaluate the effect of environmental conditions on modified protein production. The results indicated that the yield of modified protein could be increased by up 3-fold in bioreactor as compared with flask. In addition, the temperature, the agitation speed and the oxygen were significant factors on the expression of the antihypertensive protein. The maximum production was 99 mg protein-L(-1). The hydrolyzed protein showed a high inhibitory activity of the angiotensin converting enzyme (IC50=0.047 mg mL(-1)).

Copyright © 2012 Elsevier B.V. All rights reserved.

PMID: 22248593 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms, Substances**LinkOut - more resources**

CERTIFICO QUE ESTE DOCUMENTO
ES COPIA FIEL DEL ORIGINAL QUE
TUVE A LA VISTA


M. A. EDITH PÉREZ CANO
JEFA DEL DEPTO. DE INVESTIGACION
Y POSGRADO DE CIBA TLAX. I.P.N.