

# Angiotensin-converting enzyme inhibitory and antioxidative activities and functional characterization of protein hydrolysates of hard-to-cook chickpeas.

Medina-Godoy [S](#), [Ambriz-Pérez DL](#), [Fuentes-Gutiérrez CI](#), [Germán-Báez LJ](#), [Gutiérrez-Dorado R](#), [Reyes-Moreno C](#), [Valdez-Ortiz A](#).

## Source

Departamento de Biotecnología Agrícola, Centro Interdisciplinario de Investigación para el Desarrollo Integral Regional-Unidad Sinaloa del IPN, Guasave, Sinaloa, 81101, Mexico.

## Abstract

### BACKGROUND:

The potential use of hard-to-cook (hardened) chickpeas to obtain value-added functional food ingredients was evaluated. For that purpose, some nutraceutical and functional attributes of several chickpea protein hydrolysates (CPHs) prepared from both fresh and hard-to-cook grains were evaluated.

### RESULTS:

All the CPHs prepared from both fresh and hard-to-cook grains, with the enzymes alcalase, pancreatin and papain, showed high angiotensin converting enzyme inhibitory (ACE-I) activity with IC<sub>50</sub> values ranging from 0.101 to 37.33  $\mu\text{g mL}^{-1}$ ; similarly, high levels of antioxidant activity (around 18.17-95.61  $\mu\text{mol Trolox equivalent antioxidant capacity } \mu\text{g}^{-1}$  CPH) were obtained through both the 2,2-diphenyl-1-picrylhydrazyl and 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid) methods. Regarding functional characterization of the CPHs, oil absorption values ranged from 1.91 to 2.20 mL oil  $\text{g}^{-1}$  CPH, with water solubility almost 100% from pH 7 to 10.

### CONCLUSION:

The high antioxidant and ACE-I activities as well as the good functional properties of the CPH prepared from both fresh and hard-to-cook grains, suggest its use in food formulations with value added in human health. Copyright © 2012 Society of Chemical Industry.