

Bi-102 Cell Biology and Genetics, Ch-090 Preparations for Chemistry, Ch-222 Organic Chemistry 1



ANALES DE LA REAL ACADEMIA NACIONAL DE FARMACIA

ISSN (Online) 1697-4298

Review

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Curcumin and curcuminoids: chemistry, structural studies and biological properties

Title in Spanish: *Curcumina y curcuminoides: química, estudios estructurales y propiedades biológicas*

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ABSTRACT: This review concerns curcumin, a fascinating molecule that has a wide use in medicine for diseases as significant as cancer and Alzheimer. The chemical and physicochemical properties of curcumin and some of its derivatives (curcuminoids and hemicurcuminoids) will be described, in particular curcuminoids bearing a heterocycle. The most relevant biological and pharmacological properties will also be reported. At the end, our contribution to this subject is briefly presented.

RESUMEN: Esta revisión versa sobre la curcumina, una molécula fascinante, cuyas propiedades medicinales cubren campos como cáncer y Alzheimer. Se describen sus propiedades químicas y fisicoquímicas así como las de algunos de sus derivados (los curcuminoides y hemicurcuminoides), en particular aquellos que contienen un heterociclo. Las propiedades biológicas y farmacológicas más relevantes serán también mencionadas. Para concluir, se presenta brevemente nuestra contribución a este campo.

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An Real Acad Farm Vol. 81, Nº 4 (2015), pp. 278-310

Received: November 21, 2015 Accepted: December 14, 2015

Language of Manuscript: Spanish

1. INTRODUCCIÓN

El interés por la curcumina no deja de crecer como lo atestiguan las numerosas revisiones bibliográficas (1-11) [en un número reciente de esta revista hay un artículo sobre ella (12)]. Una búsqueda en Google arroja 1.240.000 resultados (pero muchos son de productos comerciales y de medicina natural) y otra en la base de datos ScienceDirect resulta en 11.750 artículos (para "curcuminoids" aparecen 1.422 citas). Es evidente que la presente revisión sólo puede dar una visión parcial de la curcumina y de sus derivados.

1.1. Taxonomía y origen

La curcumina (1) (Figura 1) pertenece a la familia de los curcuminoides, pigmentos polifenólicos presentes en los rizomas o tallos subterráneos de la planta tropical

Cúrcuma (*Curcuma longa* L., Zingiberaceae), conocida también como turmerico o haldi, nativa del sur y sudeste del Asia tropical que pertenece a la familia del jengibre.

La cúrcuma es utilizada en el Sudeste Asiático y en la India desde hace miles de años. Sus múltiples aplicaciones incluyen dar sabor a los alimentos, teñir telas de color amarillo-naranja y como remedio para aliviar diferentes trastornos de la salud. La planta es de tallo largo (cerca de un metro de longitud) y sus flores son de color blanco. El rizoma de la planta, donde se encuentran los pigmentos curcuminoides, tiene unas dimensiones máximas de unos 7 cm de largo por 2,5 cm de ancho. La planta necesita aproximadamente 8-10 meses para madurar.

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