

# Absolute Configuration of Antifibrotic (+)-Episesamin Isolated from *Lindera obtusiloba* BLUME

Wolfram Trowitzsch-Kienast<sup>a,\*</sup>, Martin Rühl<sup>b</sup>, Ki Y. Kim<sup>c</sup>, Franziska Emmerling<sup>d</sup>, Ulrike Erben<sup>b</sup>, Rajan Somasundaram<sup>b</sup>, and Christian Freise<sup>b</sup>

<sup>a</sup> Beuth Hochschule für Technik Berlin, Luxemburger Str. 10, D-13353 Berlin, Germany.

Fax: +4930–4504–2011. E-mail: kienast@beuth-hochschule.de

<sup>b</sup> Department of Gastroenterology, Charité-Campus Benjamin Franklin, Hindenburgdamm 30, D-12203 Berlin, Germany

<sup>c</sup> Faculty of Beauty Design, Human Environmental Science College, Wonkwang University, Iksan City, Chonbuk 570–749, South Korea

<sup>d</sup> BAM, Federal Institute for Materials Research and Testing, Unter den Eichen 87, D-12205 Berlin, Germany

\* Author for correspondence and reprint requests

Z. Naturforsch. **66c**, 460–464 (2011); received March 17/June 10, 2011

*Dedicated to Prof. Dr. Hans Brockmann, Bielefeld, on the occasion of his 75<sup>th</sup> birthday*

Fractionation of a 70% ethanolic extract from twigs of *Lindera obtusiloba* BLUME (Japanese spicebush, Tohaku) yielded five fractions of different polarity. The antifibrotic activity within the chloroform phase was best assessed by an *in vitro* bioassay using rat hepatic stellate cell (HSC) proliferation and their autocrine transforming growth factor beta (TGF- $\beta$ ) expression as sensitive fibrosis-associated read out. Chromatography of the chloroform extract on Sephadex LH-20 or liquid-liquid extractions yielded a crystalline compound as an active principle, which was identified from NMR and ESI-MS analyses, its melting point, and its optical rotation as (7*S*,7'*R*,8*R*,8'*R*)-3,4:3',4'-bis(methylenedioxy)-7,9':7',9'-diepoxy-lignane [(+)-episesamin]. X-Ray diffraction confirmed the structure and provided, for the first time, directly its absolute configuration. (+)-Episesamin blocked proliferation and the profibrotic autocrine TGF- $\beta$  expression HSC without significant cytotoxicity.

**Key words:** TGF- $\beta$ , Liver Fibrosis, X-Ray Structure