

## Short communication

Cytotoxic cytochalasins from the endophytic fungus *Eutypella scoparia* PSU-H267Thippaya Kongprapan<sup>a</sup>, Vatcharin Rukachaisirikul<sup>a,\*</sup>, Saowanit Saithong<sup>a</sup>, Souwalak Phongpaichit<sup>b</sup>, Wimarak Poonsuwan<sup>b</sup>, Jariya Sakayaroj<sup>c</sup><sup>a</sup> Department of Chemistry and Center of Excellence for Innovation in Chemistry, Faculty of Science, Prince of Songkla University, Hat Yai, Songkhla 90112, Thailand<sup>b</sup> Department of Microbiology and Natural Products Research Center of Excellence, Faculty of Science, Prince of Songkla University, Hat Yai, Songkhla 90112, Thailand<sup>c</sup> National Center for Genetic Engineering and Biotechnology (BIOTEC), Thailand Science Park, Klong Luang, Pathumthani 12120, Thailand

## ARTICLE INFO

## Article history:

Received 8 April 2015

Received in revised form 5 June 2015

Accepted 12 June 2015

Available online xxx

## Keywords:

*Eutypella scoparia**Hevea brasiliensis*

Chromenes

Cytochalasins

Pimarane diterpenes

Cytotoxic activity

## ABSTRACT

Eleven compounds including one new cytochalasin derivative, scoparasin C (**1**), four cytochalasins (**2–5**), four pimarane diterpenes (**6–9**) and two chromene derivatives (**10** and **11**) were obtained from a culture broth of *Eutypella scoparia* PSU-H267 which was isolated from a leaf of *Hevea brasiliensis*. Their structures were determined by spectroscopic evidence. For compounds **2**, **3** and **5**, the structures were confirmed by single-crystal X-ray diffraction crystallography. Compounds **1**, **3**, **4** and **7** were strongly active against Vero cell lines with IC<sub>50</sub> values of 1.19, 0.04, 1.01 and 2.50 μM, respectively. Only compound **3** displayed potent cytotoxic activity towards KB-oral cavity cancer cell lines with the IC<sub>50</sub> value of 2.46 μM.

©2015 Phytochemical Society of Europe. Published by Elsevier B.V. All rights reserved.

## 1. Introduction

The fungus *Eutypella scoparia* produced bioactive secondary metabolites such as the antibacterial diaporthein B and scoparasin B (Pongcharoen et al., 2006), cytotoxic phenochalasin B (Sun et al., 2011a) as well as antitumor diaporthein B (Li et al., 2011). Chemical investigation of this fungus has resulted in the discovery of various types of metabolites, including chromenes (Pongcharoen et al., 2006; Sun et al., 2013), cytochalasins (Pongcharoen et al., 2006; Ciavatta et al., 2008; Sun et al., 2011a, 2013), cytosporin-related compounds (Ciavatta et al., 2008), pimarane diterpenes (Pongcharoen et al., 2006; Sun et al., 2011b, 2012a), sesquiterpenes (Sun et al., 2011a, 2012b) and steroids (Sun et al., 2011b). In this study, we chemically investigated secondary metabolites produced by *E. scoparia* PSU-H267 isolated from a leaf of *Hevea brasiliensis* collected in Songkhla Province, Thailand. The broth EtOAc extract of *E. scoparia* PSU-H267 showed interesting cytotoxic activity against KB-cells with an IC<sub>50</sub> value of 1.63 μg/mL. Purification of the broth EtOAc extract led to the isolation of 11 compounds including one new cytochalasin derivative, scoparasin C (**1**), four

known cytochalasin derivatives: scoparasin A (**2**) (Pongcharoen et al., 2006), phenochalasin B (**3**) (Tomoda et al., 1999), Δ<sup>6,12</sup>-isomer of 5,6-dehydro-7-hydroxy-29-methoxycytochalasin E (**4**) and [12]-cytochalasin (**5**) (Sharma et al., 2005), four known pimarane diterpene derivatives: diaportheins A (**6**) and B (**7**) (Dettrakul et al., 2003), 11-deoxydiaporthein A (**8**) (Yoshida et al., 2007) and scoparane A (**9**) (Pongcharoen et al., 2006), and two known chromene derivatives: cytosporin D (**10**) (Ciavatta et al., 2008) and (*R*)-3,4-dihydro-4,8-dihydroxy-6-methoxy-4,5-dimethyl-3-methyleneisochromen-1-one (**11**) (Tayone et al., 2011). The isolated compounds **1–8** were evaluated for antimicrobial, antimycobacterial, antimalarial and cytotoxic activities.

## 2. Results and discussion

The broth ethyl acetate extract of *E. scoparia* PSU-H267 was subjected to chromatographic techniques leading to the isolation of one new (**1**) and 10 known compounds (**2–11**). The structures of all metabolites (Fig. 1) were elucidated by analysis of spectroscopic data. For known compounds, their structures were confirmed by comparison of the <sup>1</sup>H and <sup>13</sup>C NMR data as well as specific rotations with those previously reported in the literature. The X-ray data of **2**, **3** and **5** (Fig. 2) are reported for the first time.

\* Corresponding author. Fax: +66 7455 8841.

E-mail address: [vatcharin.r@psu.ac.th](mailto:vatcharin.r@psu.ac.th) (V. Rukachaisirikul).

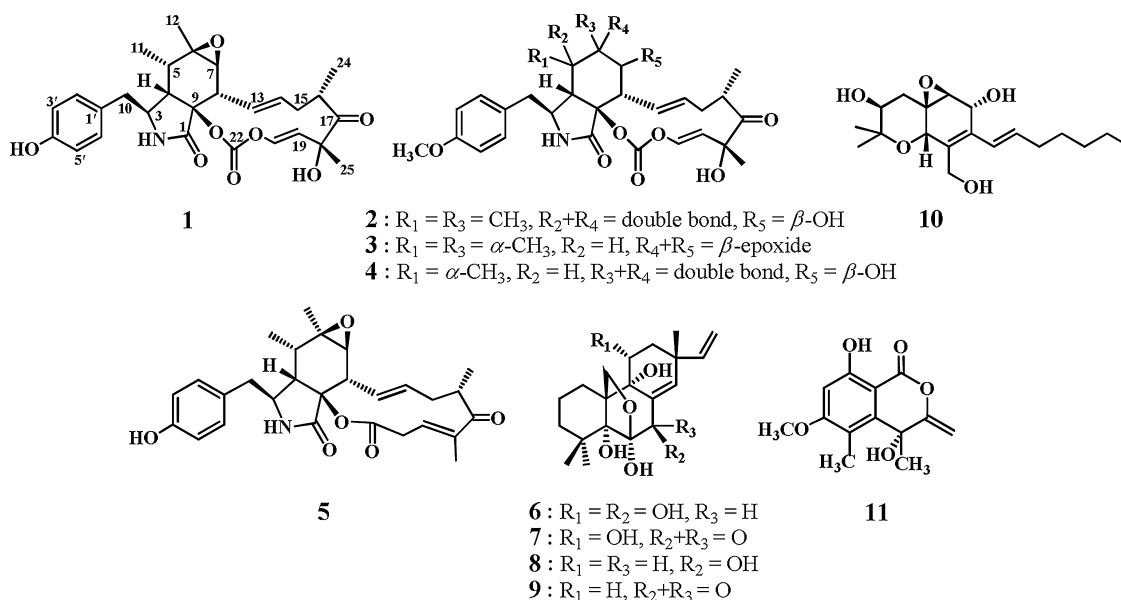


Fig. 1. Structures of compounds 1–11 isolated from *Eutypella scoparia* PSU-H267.

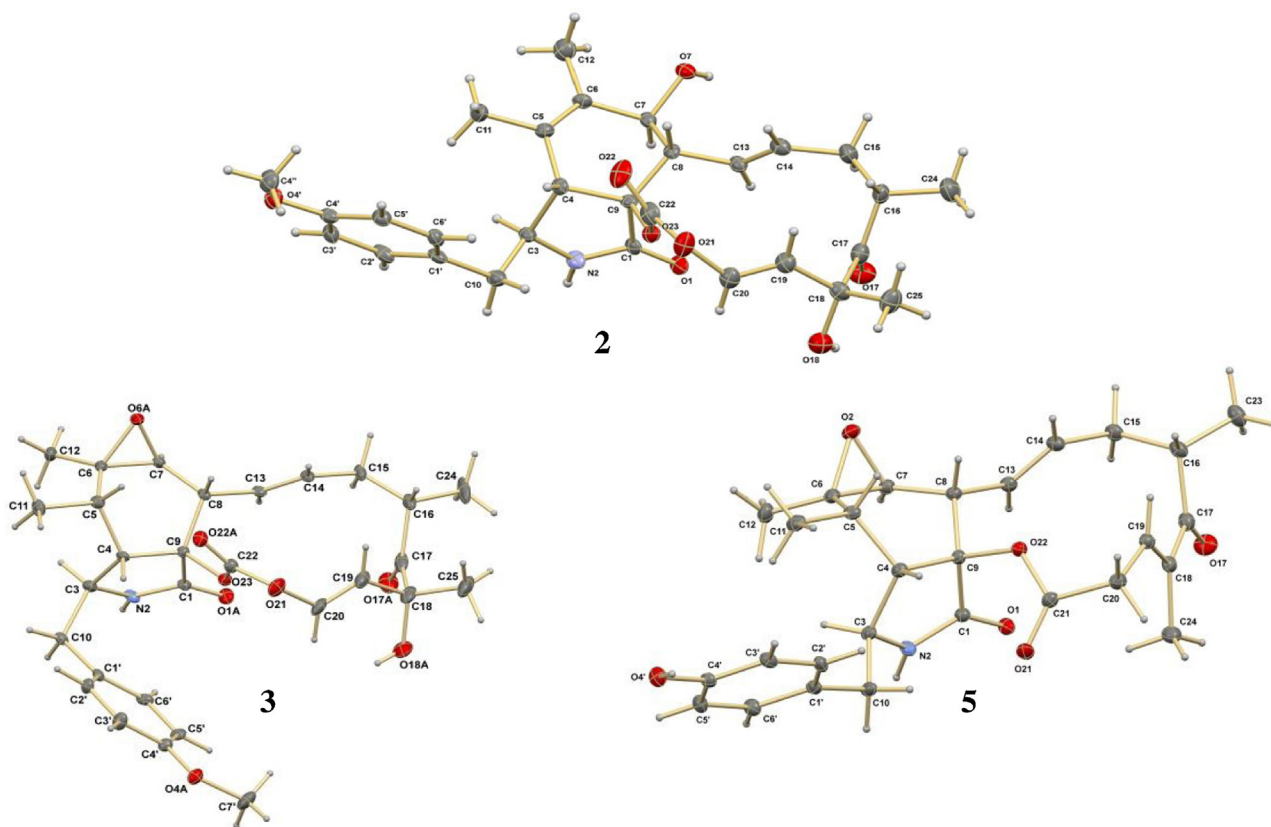


Fig. 2. ORTEP drawings of 2, 3 and 5.

Scoparasin C (**1**) was obtained as a colorless solid, melting at 140–142 °C, and had the molecular formula  $\text{C}_{28}\text{H}_{32}\text{NO}_8$  by HRESIMS. The UV spectrum showed maximum absorption bands at 225, 277 and 285 nm, indicating the presence of a conjugated aromatic chromophore (Tomoda et al., 1999). The IR spectrum exhibited absorption bands at  $3278\text{ cm}^{-1}$  for a hydroxy group,  $1769\text{ cm}^{-1}$  for a vinyl carbonyl moiety and  $1715\text{ cm}^{-1}$  for ketone and lactam carbonyl functional groups (Pongcharoen et al.,

2006). The  $^1\text{H}$  NMR spectrum (Table 1) displayed the characteristic signals for four *ortho*-coupled aromatic protons of a *para*-substituted benzene ( $\delta_{\text{H}}$  6.99 and 6.80, each d,  $J = 8.7\text{ Hz}$ , 2H), one amino proton ( $\delta_{\text{H}}$  6.65, br s, 1H), one hydroxy proton ( $\delta_{\text{H}}$  4.70, br s, 1H), *trans*-olefinic protons of the unsaturated carbonate moiety ( $\delta_{\text{H}}$  6.45 and 5.59, each d,  $J = 11.7\text{ Hz}$ , 1H) (Pongcharoen et al., 2006), *trans*-olefinic protons of a nonconjugated alkene [ $\delta_{\text{H}}$  5.85 (m, 1H) and 5.20 (ddd,  $J = 14.7, 10.5$  and  $3.6\text{ Hz}$ , 1H)], six

Download English Version:

<https://daneshyari.com/en/article/5176446>

Download Persian Version:

<https://daneshyari.com/article/5176446>

[Daneshyari.com](https://daneshyari.com)