10-Phenyl-[11]-cytochalasans from Indonesian mushroom

*Microsporellus subsessilis*

Dikdik Kurnia 1*, Kohki Akiyama 2, Hideo Hayashi 2

1 Laboratory of Organic Chemistry, Department of Chemistry
Faculty of Mathematics and Natural Science, University of Padjadjaran,
Jl. Raya Bandung-Sumedang km.21, Jatinangor 45364, Indonesia

2 Laboratory of Bioresource Chemistry-Division of Applied Life Sciences
Graduate School of Life and Environmental Sciences-Osaka Prefecture University,
Gakuen-cho, Sakai, Osaka 599-8531, Japan

*e-mail: dikdikkurnia@unpad.ac.id*

Abstract

In the course for new bioactive compounds from Indonesian mushrooms, the MeOH extract of *Microsporellus subsessilis* was found to induce immotility in *Artemia salina*. Bioactivity-guided fractionation of this extract revealed six members of cytochalasin family including three new 10-phenyl-[11]-cytochalasan (4-6) together with three known derivatives (1-3). 1H and 13C NMR spectra data of 1 were in good agreement with those of (7S,16S,18S,19R)-7,18,19-trihydroxy-16,18-dimethyl-10-phenyl-[11]-cytochalasa-6(12),13(E)-diene-1,21-dione, and compounds 2 and 3 were identified as 19-hydroxyl and 19-methoxyl derivatives of 1, respectively, which isolated from *Daldinia* fungal species. In the new compound 4, the six-membered ring of 3 was modified with a double bond that newly introduced between C-6 and C-7 and that a hydroxymethyl was located at C-6, and the new compound 5 was determined as 6,7-epoxide of 3. In new compound 6, the hydroxyl at C-19 of 1 was acylated with a C16 fatty acid containing two double bonds and a branched methyl. The structure of fatty acid moiety was determined as a novel fatty acid, trans/trans-conjugated 4-methyl-6,8-hexadecadienoic acid, consequently the structure of 6 was determined to be (7S,16S,18S,19R)-7,18-dihydroxy-19-O-(4-methyl-6(E),8(E)-hexadecadienoyl)-16,18-dimethyl-10-phenyl-[11]-cytochalasa-6(12),13(E)-diene-1,21-dione. To our best knowledge, compound 6 is the first member of cytochalasin family containing a long chain fatty acid moiety. Immotile activity data of compounds 1-6 showed that 10-phenyl-[11]-cytochalasans 1, 2, 3 and 6 induced 72%, 78%, 64%, and 63% immotility in brine shrimp at 10 ppm, respectively.

Keywords: mushroom, *Microsporellus subsessilis, Artemia salina*, chytocchalasin, conjugated fatty acid

Full paper not available