C06

A New Compound, brefeldin A formylate , from *Penicillium* sp. Strain HLKG-44

Mei-juan Fang[1], Han-wen Zhang[2], Hong-Ming Cheng[2], Hua Fang[3] and Yu-fen Zhao[1,2]

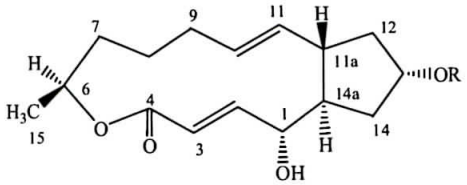
1. Department of Pharmaceutical Science, Medical College, Xiamen University, Xiamen 361005, China.
2. Department of Chemistry, Key Laboratory for Chemical Biology of Fujian Province College of Chemistry and Chemical Engineering, Xiamen University Xiamen 361005, China.
3. The Third Institute of Oceanography of the State Oceanic Administration, Xiamen 361005, China.

Correspondence E-mail: fangmj@xmu.edu.cn

Abstract

Less attention was focused on the fungi which were isolated from polluted environment, which might provide a good alternative to search for useful natural products[1]. *Penicillium* sp. strain HLKG-44 is an endophytic fungus isolated from a highly contaminated river in southern China. The extracts of the fungus show high cytotoxicity against several human cancer cell lines, such as KB cell (IC_{50}, 0.028 g/mL) and Raji cell (IC_{50}, 0.035 g/mL). Little work has been carried out on the fungal genus, *Penicillium*. During initial investigations into the metabolites of this species, we have isolated three compounds, including a new compound, named as brefeldin A formylate, and two known compounds, brefeldin A and ergosterol.

BFA is a macro-cyclic lactone fungal metabolite exhibiting a wide range of antifungal, antiviral, antimitotic, and antitumor activity[2]. It has attracted research interest for many years due to its peculiar molecular structure and its bioactivity [3,4]. Here, we find brefeldin A formylate for the first time from *Penicillium* sp. strain HLKG-44. Brefeldin A formylate also shows antitumor activity. In the present paper, we report the isolation and structural elucidation of the new compound **1**, together with two known compounds, brefeldin A and ergosterol. The structure of the compound **1** was established by the spectral and X-ray crystallographic analysis (Figure 2).



Compound 1: formic acid BFA ester R = HCO

Compound 2: BFA R = H

Figure 1. Chemical structures of compound 1~2

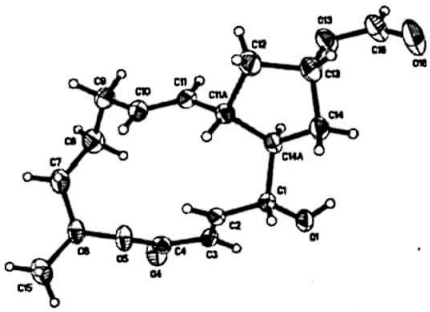


Figure 2. X-ray crystal structure of compound 1

Acknowledgements

The authors would like to thank the financial supports from the National Natural Science Foundation of China (No. 20572061) and the National Natural Science Foundation of China (No. 20732004).

References

[1] M. J. Fang, H. Fang, Y. J. Huang, Y. F. Zhao. *Tetrahedron Letters*. 46 (12), 2147 (2005).
[2] S. Budavari (ed). The Merck Index (12th edn). Merck: Rahway, NJ, 224 (1996), and references cited therein.
[3] G. K.Tamura, K. Ando, S. Suzuki, A. Takai'mki, and K. Arhna. *J. Antibiotics*, I21, 160 (1968).
[4] A. Takatsuki, L. Yamaguchi, G. Tamura, T. Misato, K. Arima, *J. Antibiotics*, 22, 442 (1969).