

STERIODS FROM *Armillaria mellea* RHIZOMORPHS

W. J. Guo and S. X. Guo*

UDC 547.597

In China, *Armillaria mellea* is eaten as food by people and used to treat of dizziness, headache, neurasthenia, insomnia, numbness in limbs, and infantile convulsion [1]. Previous studies on *A. mellea* emphasized artificially cultured mycelia but natural rhizomorphs have not been studied. We attempted to find the dominant components of the extract.

The rhizomorphs of the fungus used in the study were collected in Shanxi Province, China in September 2003. A voucher specimen (DMF-00541) has been deposited at the Department of Medicinal Fungus, Institute of Medicinal Plant Development, Chinese Academy of Medical Sciences.

Dried and minced rhizomorphs of *A. mellea* (5 kg) were extracted three times with MeOH, 3 hours each time. The solvent was removed under reduced pressure to give crude extract (100 g). The aqueous suspension of the extract was partitioned successively with light petroleum, ethyl acetate, and *n*-BuOH, resulting in light petroleum (17 g), ethyl acetate (11 g), and *n*-BuOH (8 g) extracts. The light petroleum-soluble fraction (17 g) was concentrated and subjected to 200-300 mesh silica gel column chromatography eluting with a gradient of light petroleum-EtOAc (from 0:1 to 1:1) to yield 12 fractions. The subfractions were then purified by successive column chromatography on 300-400 mesh silica gel using light petroleum-EtOAc and light petroleum-acetone as elution systems, monitored by TLC, and led to the isolation of compounds 1-6. The structures were elucidated by ¹H NMR, ¹³C NMR, HSQC, HMBC, and MS analysis.

All these data were in good agreement with the literature data. All compounds were isolated from rhizomorphs of *A. mellea* for the first time.

5 α ,6 α -Epoxy-24(*R*)-methylcholesta-7,22-dien-3 β -ol (1) and 6,9-epoxy-ergosta-7,22-dien-3-ol (2) were reported for the first time from the genus *Armillaria*.

5 α ,6 α -Epoxy-24(*R*)-methylcholesta-7,22-dien-3 β -ol (1) 5 mg; white powder; C₂₈H₄₄O₂. The data of ¹H NMR and ¹³C NMR spectrum were identical to that in the literature [2].

6,9-Epoxy-ergosta-7,22-dien-3-ol (2) 15 mg; colorless needles; C₂₈H₄₄O₂, mp 226-229°C. The data of ¹H NMR and ¹³C NMR spectrum were identical to that in the literature [3].

Ergosterol (3) 280 mg; colorless needles; C₂₈H₄₄O, mp 165-167°C. The data of EI mass spectrum agree with that in the literature [4]. The ¹³C NMR spectrum was identical to that in the literature [5].

β -Sitosterol (4) 65 mg; colorless needles; C₂₉H₅₀O, mp 134-136°C. The ¹H NMR and ¹³C NMR spectrum were identical to that in the literature [6].

Stigmasterol (5) 16 mg; colorless needles; C₂₉H₄₈O. The ¹H NMR and ¹³C NMR spectrum were identical to that in the literature [7].

Ergosterol-5,8-peroxide (6) 16 mg; colorless needles; C₂₈H₄₄O₃, mp 172-174°C. The data of EI-MS, ¹H NMR, and ¹³C NMR spectrum agree with that in the literature [8].

REFERENCES

1. J. S. Yang, Y. W. Chen, X. Z. Feng, D. Q. Yu, and X. T. Liang, *Planta Med.*, **50**, 288 (1984).
2. J. W. Woo Bok, L. Lermer, J. Chilton, H. G. Klingeman, and G. H. Neil Towers, *Phytochemistry*, **51**, 891 (1999).
3. X. M. Chen, J. S. Yang, and S. X. Guo, *Acta Pharm. Sin.*, **35**, 367 (2000).
5. X. Q. Zhang, Z. Q. Yin, W. C. Ye, and S. X. Zhao, *Chinese Traditional and Herbal Drugs*, **36**, 1601 (2005).
6. L. Q. Hai, J. J. Xu, S. A. Kai, X. Zhang, and L. Y. Ma, *West China J. Pharm. Sci.*, **21**, 47 (2006).
7. C. G. Feng and Q. Li, *Chin. Trad. Patent Med.*, **28**, 94 (2006).
8. Y. H. Liu, L. C. Xu, J. P. Wang, and J. Z. Tian, *Chin. Trad. Patent Med.*, **28**, 998 (2005).

Institute of Medicinal Plant Development, Chinese Academy of Medical Sciences and Peking Union Medical College, No. 151, Malianwa North Road, Haidian District, Beijing, P. R. China, 100094; e-mail: sxguo@implad.ac.cn. Published in *Khimiya Prirodnikh Soedinenii*, No. 3, p. 322, May-June, 2008. Original article submitted February 13, 2007.