Journal of Natural Products
Vol. 52, No. 2, pp. 380, Mar-Apr 1989

ISOLATION OF ILLUDIN S FROM THE MUSHROOM *OMPHALOTUS OLIVASCENS*

TREVOR C. MCMORRIS,* SURKSIK MOON, GILANTHONY UNGAB,

Department of Chemistry, University of California, San Diego, La Jolla, California 92093

and ROBERT J. KEREKES

Poison Information Center, University of California, San Diego Medical Center, San Diego, California 92103

ABSTRACT.—The toxic sesquiterpene illudin S has been isolated from the mushroom *Omphalotus olivascens* which was collected in San Diego, California. The yield of illudin S was approximately 5 mg from 400 g of mushroom.

The toxicity of the jack-o-lantern mushroom, *Omphalotus illudens*, is well documented (1). This yellow-orange mushroom, which until recently was classified as *Clitocybe illudens*, forms large, fleshy fruit bodies that grow in clusters around stumps or at the base of trees. The main toxin in *O. illudens* is believed to be the sesquiterpene illudin S, which was first isolated from culture liquids of the fungus (2,3). Illudin S has also been isolated from a related poisonous mushroom *Lampteromyces japonicus* (Kawamina) Singer, a species known only from Japan (4,5). A related species, *Omphalotus olearius*, occurs in Europe and is likewise toxic (6,7).

In view of current interest in illudin S and illudin M as possible chemotherapeutic agents (8), we have examined a sample of *Omphalotus olivascens* (Bigelow) Miller and Thiers (Tricholomataceae) growing in San Diego and have isolated from it illudin S. To our knowledge, the isolation of this compound from mushrooms growing on this continent has not previously been reported.

EXPERIMENTAL

A sample of *O. olivascens* (400 g, wet wt) was collected in Balboa Park, San Diego in December 1987. No voucher specimen is available. It was placed in a flask with 500 ml of MeOH. After 4 weeks, the purple solution that had formed was poured off and concentrated in vacuo below 50° to a brown solid (~2 g). Chromatography of the solid on Si gel 70–230 mesh (200 g) with EtOAc-hexane (1:1) gave a fraction (50 mg) which contained illudin S. This was rechromatographed on Si gel (20 g) with Et_2O to give crystalline illudin S (~5 mg) identical to the authentic compound in chromatographic and spectral properties (ir, nmr, uv, ms). The yield of illudin S from the mushroom was similar to that reported for illudin S isolated from *L. japonicus* (4).

LITERATURE CITED

1. T.F. Ammirati, J.A. Traquais, and P.A. Horgen, "Poisonous Mushrooms of the Northern United States and Canada," University of Minnesota Press, Minneapolis, 1985, p. 290.
2. T.C. McMorris and M. Anchel, *J. Am. Chem. Soc.*, **85**, 831 (1963).
3. T.C. McMorris and M. Anchel, *J. Am. Chem. Soc.*, **87**, 1594 (1965).
4. K. Nakanishi, M. Ohashi, M. Tada, and Y. Yamada, *Tetrahedron*, **21**, 1231 (1965).
5. T. Matsumoto, H. Shirahama, A. Ichihara, Y. Fukuoka, Y. Takahashi, Y. Mori, and M. Watanabe, *Tetrahedron*, **21**, 2671 (1965).
6. Z. Maretíc, *Toxicon*, **4**, 263 (1967).
7. Z. Maretíc, F. Russell, and V. Golobíc, *Toxicon*, **13**, 379 (1975).
8. M.J. Kelner, T.C. McMorris, W.T. Beck, J.M. Zamora, and R. Taetle, *Cancer Res.*, **47**, 3186 (1987).

Received 23 May 1988