

New *p*-terphenyls with antioxidant activity from mushroom *Paxillus curtisii*

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Bong-Sik Yun****Paxillus curtisii*로부터 분리한 신규 *p*-terphenyl계 항산화 화합물**

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Objectives

The oxidation of biological molecules such as lipid, proteins, and DNA by reactive oxygen is thought to be responsible for the development of numerous pathological processes including cancer, aging, inflammatory diseases, and ischemia. Chain-breaking antioxidants, such as vitamin E, suppress oxidation and protect biological molecules and tissues from oxidative damage. As a consequence, the role of antioxidants has received a great deal of attention. The first trials to investigate the antioxidant efficacies were designed to assess the radical scavenging effects. In this study, we searched for novel free radical scavengers from the methanolic extracts of Korean native wild mushrooms.

Materials and Methods

Free radical scavenging activity of Korean native wild mushrooms was evaluated by using the DPPH radical, ABTS radical cation, superoxide radical anion, and hydroxyl radical. During the evaluation of antioxidant activity, we found that the methanol extract of the fruiting body of *Paxillus curtisii* exhibited potent free radical scavenging activity. The methanolic extract of the fruiting bodies of *P. curtisii* was partitioned between ethyl acetate and water. The ethyl acetate-soluble portion was chromatographed on a column of silica gel eluting with a gradient of increasing methanol (2-50%) in chloroform to afford an active fraction. The fraction was subjected to a column of Sephadex LH-20 eluting with a mixture of chloroform-methanol (1:1), followed by preparative HPLC with a reversed phase C-18 column to give curtisians 1-5. The structures of isolated compounds were identified based on extensive spectroscopic analyses, and their antioxidant activity containing DNA single strand breakage and 2-deoxyribose degradation systems were evaluated.

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Results

New *p*-terphenyls, curtisians 1-5, were isolated from the fruiting bodies of *Paxillus curtisii*. They exhibited significant protective effects against oxidative damage of supercoiled DNA and 2-deoxyribose by hydroxyl radical generated from Fenton reaction.

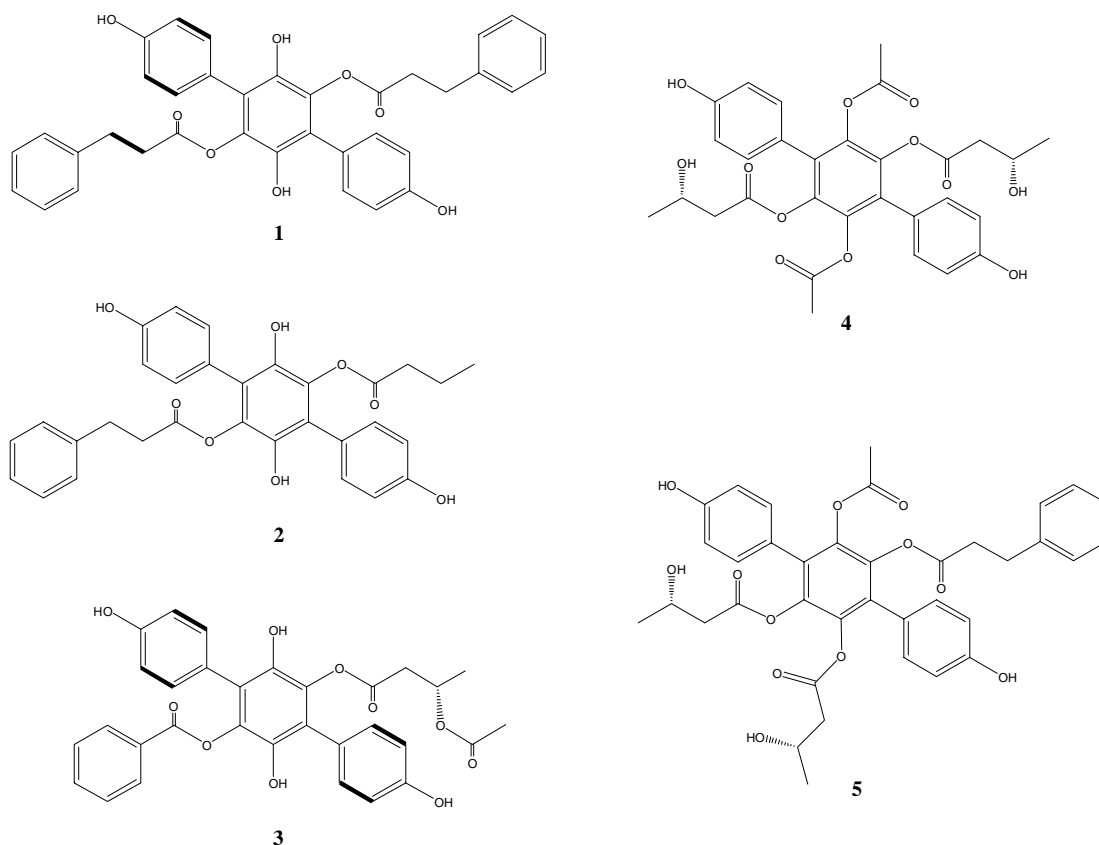


Figure 1. Structures of curtisians 1-5.

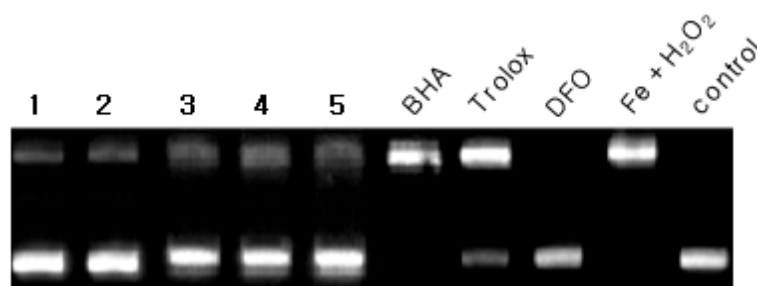


Figure 2. Protective effects of curtisians against plasmid DNA breakage by Fenton reaction with ferrous and hydrogen peroxide.