New ceriporic acids with an unsaturated side chain produced by a selective white rot fungus, *Ceriporiopsis subvermispora*

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A white rot fungus, *Ceriporiopsis subvermispora* is able to degrade lignin without intensive damage to cellulose. In selective white rot, lignin is degraded at a site far from the enzymes. The unique wood decay pattern suggests that extracellular low molecular mass metabolites are principally responsible for lignin degradation. To explain the lignin biodegradation by metabolites at a site far from enzymes, involvement of lipid peroxidation by chelated Mn^{3+} produced by manganese peroxidase (MnP) has been proposed. During wood decay, *C. subvermispora* secretes a series of unsaturated fatty acids including linoleic acid which can be oxidized by chelated Mn^{3+} to initiate the lipid peroxidaition. So far, four alk(en)ylitaconic acids; tetradecylitaconic (ceriporic acid A), hexadecylitaconic (ceriporic acid B), (*Z*)-7-hexadecenylitaconic (ceriporic acid C) and (*E*)-7-hexadecenylitaconic acid (ceriporic acid D) have been isolated and identified. An epoxidized ceriporic acid, (*R*)-3-(7,8-epoxy-hexadecyl)-itaconic acid has also been identified from the cultures of *C. subvermispora*. More recently, new analogues of alk(adi)enylitaconic acids have been found from the cultures of *C. subvermispora* by LCMS. However, their chemical structures have not been clarified. To elucidate the structure and functions of the new metabolites, alkenyl- and alkadienylitaconic acids were chemically synthesized. The synthetic compounds were identical to the metabolites found from the cultures of *C. subvermispora.* The alkadienylitaconic acid is a potential metabolite involved in the initiation of lipid peroxidation due to 1,4-dienyl structure in its side chain.

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