【論文】

マンネンタケ子実体の水抽出物に含まれるアンギオテンシン変換酵素阻害成分

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Angiotensin-converting enzyme inhibitor in water extracts from the fruiting body of *Ganoderma lucidum*

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[Abstract]

The fruiting body of *Ganoderma lucidum* has inhibitory activity against angiotensin-converting enzyme (ACE), which has an important role in controlling blood pressure in the human body. In the present study, we identify and characterize the ACE inhibitory compounds from water extracts of *G. lucidum* fruiting body. After the fractionation of ACE inhibitory compounds by ethanol, ultrafiltration, and cation-exchange column chromatography, an active fraction (named EU3C) having an IC_{50} of 89 μg/mL was obtained with a yield of 14.1%. EU3C showed competitive-type inhibition on ACE activity and K_i was estimated to be 49 μg/mL. Further separation of EU3C with reverse-phase chromatography led to increased IC_{50} and K_i values, suggesting that the ACE activity is inhibited by various compounds but not by a single chemical in EU3C. Protein assay and thin layer chromatography analysis based on the ninhydrin reaction revealed that EU3C includes various peptides. ACE inhibitory activity of EU3C was decreased by incubation with carboxypeptidase and acid hydrolysis. These results suggest that peptides of EU3C are responsible for the ACE inhibitory activity of *G. lucidum* fruiting body.

Key words: Angiotensin-converting enzyme, *Ganoderma lucidum*, water extract

［摘　要］

本研究ではマンネンタケ水抽出物中のACE阻害活性成分の同定を試みた．水抽出物をエタノール分画，限外ろ過，陽イオン交換クロマトグラフィーを用いて精製し，精製物（EU3C）を得た．EU3CのIC_{50}値は89 μg/mL，K_i値は49 μg/mLであった．さらにEU3Cを逆相クロマトグラフィーにより分画した結果，IC_{50}値およびK_i値は上昇した．一方，EU3Cは拮抗阻害を示し，TLC分析の結果，ニンヒドリン反応を示す複数のスポットが確認され，ペプチドの存在が示唆された．そこで，カルボキシペプチダーゼ処理および酸加水分解によるACE阻害活性への影響を確認した．その結果，カルボキシペプチダーゼ処理および酸加水分解処理によりACE阻害活性の

低下が確認された．これらの結果から，マンネンタケ水抽出物のACE阻害活性には，ペプチドが関与すると考えられる．