

論文審査の要旨  
Summary of Dissertation Review

博士の専攻分野の名称 Degree	博 士 (学術)	氏名 Author	DO TAN KHANG
学位授与の要件	学位規則第4条第①・2項該当		
論 文 題 目 Title of Dissertation Involvement of Phenolics in Allelopathy and Submergence Tolerance of Rice ( <i>Oryza sativa</i> L.)			
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〔論文審査の要旨〕 Summary of Dissertation Review			
<p>This research was conducted to examine the roles of phenolics and their derivatives to allelopathy and submergence tolerance of rice. Many phenolic acids were identified and quantified from rice plants and rice hulls and examined for their herbicidal activity on donor plants. Modern analytical instruments such as HPLC, GC-MS, and <sup>1</sup>H NMR and <sup>13</sup>C NMR were applied to determine the chemical structures of novel compounds isolated from rice.</p> <p>In addition, the impacts of phenolic acids such as protocatechuic and vanillic acids on total phenolic, chlorophyll, malondialdehyde (MDA) contents and antioxidant enzyme activities of rice seedlings in submerged condition were evaluated by treating plant with protocatechuic acid and vanillic acid, the total endogenous phenolic and flavonoid contents, the activities of superoxide dismutase (SOD) and ascorbate peroxidase (APX) were strongly promoted. Similarly, the expression of genes encoding for antioxidant enzymes was elevated. In addition, vanillic acid increased the expression level of APX gene in much higher levels than that of protocatechuic acid and their mixture, whilst no significant difference was observed in the other genes including SOD, CAT (catalase), GR (gluthione reductase), and POD (peroxidase).</p> <p>The findings of this study, highlighted the positive roles of protocatechuic acid and vanillic acid in photosynthetic and antioxidative processes in rice seedlings during submergence, potentially helping promote the submergence tolerance in rice.</p> <p>The examined committee agreed that the applicant is fully qualified to be awarded the degree of Doctor of Philosophy.</p>			