

Abstract Submitted
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Radical activated solutions with bactericidal and plant-growth effects¹ MASAFUMI ITO, NAOYUKI IWATA, VLADISLAV GAMALEEV, Meijo University, HIROSHI HASHIZUME, Nagoya University, JUN-SEOK OH, Osaka City University, TAKAYUKI OHTA, Meijo University, KENJI ISHIKAWA, MASARU HORI, Nagoya University — In this study, we have investigated a bactericidal solution produced by radical exposure which can be effective in a neutral pH range, where many plants grow well. We firstly prepared phosphate buffer solution (PB) with the pH of 6.3 by dissolving Disodium Phosphate and Sodium Dihydrogenphosphate Dihydrate (Wako Chemical) into ultra-pure water obtained through Millipore Direct-Q 3UV system. Then, phenylalanine, tryptophan, tyrosine, which are known as the aromatic amino acids, and alanine as the control were dissolved into the PB solution with the concentrations of 80, 2, 50, and 80 μM respectively, using a magnetic stirrer and a rotor with the speed of 1500 rpm for 30 min. Subsequently, the amino-acid dissolved PB solutions were treated using an oxygen-radical source operated under a condition of a total gas rate of 5 slm and oxygen to Ar gas flow ratio of 0.6% for several minutes. As a result, we have found that the bacteria can be killed through the oxygen-radical-treated solutions including organic compounds with benzene rings even in a neutral pH range with plant-growth promotion.

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