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Antibacterial Activities of *Bacillus* sp. Isolation from Soil

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We evaluated antagonism of antibacterial strain *Bacillus* sp. against the various pathogenic microbial. About 30 samples of soil obtained from various soil in Korea were used for isolation of bacteria producing antimicrobial activity. Each soil sample was suspended in water, and a drop of suspension were spread on the standard medium agar plates of various medium. Those cultures showing good growth were subjected to determination of antimicrobial, and the bacterial strains that showed the higher antimicrobial activity were selected. A bacterial strain were selected from the candidates isolated from Tae-Baek Mountain in Korea. The antimicrobial activity was analyzed by the paper disc method against various pathogenic bacteria and fungi. A bacterial strain showed strong activity against broad pathogenic bacteria and fungi including *Micrococcus luteus*, *Proteus vulgaris*, *Proteus mirabilis*, *Candida albicans*, *Rhizotonia solani* and *Aspergillus niger*. Thus, these studies could contribute to the detection and development of antimicrobial to the environment and humans.

Key words: *Bacillus* sp; Antimicrobial activity

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Boil Tap Water Extracts from Red Beans Protect Oxidative DNA and Cell Damage Induced by Hydroxyl Radical via the Antioxidant Properties

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In this study, we evaluated the protective effects of the red beans against oxidative DNA and cell damage induced by hydroxyl radical via an antioxidant properties. Among the extracts from red beans extracted with methanol, ethanol, hexane, tap water and boil tap water, antioxidant activities were highest in the fraction of boil tap water and then the extracts with boil tap water were used for the further assay. The antioxidant activities were evaluated by hydroxyl radical and hydrogen peroxide scavenging assay, and Fe^{2+} chelating assay. Although the extracts with boil tap water didn't scavenge the hydroxyl radical, it removed and chelated hydrogen peroxide and ferrous iron necessary for the induction of hydroxyl radical from Fenton reaction by 71% and by 83% at 200 μg/ml, respectively. The protective effect of it was tested using ψX-174 RF I plasmid DNA comparing the conversion level of supercoiled form of the plasmid DNA into open-circular and linear form. In this assay, it inhibited the hydroxyl radical induced oxidative DNA damage by 86% at 200 μg/ml. In MTT assay for the protective effect aganinst the oxidative cell damage induced by hydroxyl radical, it inhibited the oxidative cell death and the abnormal cell growth induced by hydroxyl radical. In conclusion, red beans exhibits antioxidant properties, inhibits oxidative DNA damage and the cell death caused by hydroxyl radical. These data indicate that red beans possesse a spectrum of antioxidant and DNA-protective properties common to anti-cancer agents.

Key words: Red bean, oxidative damage, hydroxyl radical, anti-cancer agents