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Thermophile-fermented compost as a functional fertilizer and feed additive, and isolation of potential valuable plant symbiotic and probiotic thermophiles from the compost

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Compost is generally used as an organic fertilizer or soil conditioner, and its effects on soil quality and plant growth have been thoroughly investigated. Recently we have reported that a compost fermented marine animals could impart physiological benefits to plants as well as animals. The biphasic functions of the compost are as follows: 1) Application of the compost to soil results in an increase of crop yield, and suppression of plant diseases caused by several plant pathogens. In addition, decreased nitrate and increased amino acids in plants are also observed. 2) Oral administration of the compost to flatfish reduces the number of dead flatfish in the nursery. When the compost extract has continuously been given to pigs in swine farms, the rate of stillbirth is decreased and the growth of piglets is promoted. In rodent models, the level of fecal immunoglobulin A, a gut mucosal barrier, raises following the compost exposure. Interestingly, oral administration of the compost extract reduces visceral fat in the mice mimic metabolic syndrome. Microbial analyses reveal that the compost contains *Bacillus* sp. expressed cyclic lipopeptides with antagonistic activity to plant fungal pathogens, and bacterial strains such as *Bacillus* sp. and *Brevibacillus* sp. to activate denitrification or nitrogen fixation. Furthermore, *Bacillus* sp. possible to modulate immune response and nutrient utilization in rodents have been isolated from the ceca of germ free mice fed the compost extract. Thus, further investigation on the functions of thermophilic isolates from the compost is necessary.

Biography

Hirokuni Miyamoto has completed his Ph.D at the age of 33 years from Keio School of Medicine, and studies on the effects of thermophiles on the plants and animals maintained in Japan Eco-sceince co., ltd. (*Nikkan Kagaku* as Japanese name), Chiba University and Keio School of Medicine. He is president of Japan Eco-sceince co., ltd. He has published more than 15 papers in reputed journals, 6 papers in books, 8 papers in Japanese journal, and 20 patents in Japan Patent Office. He has supervised on two contract researches for Ministry of Economy, Trade and Industry of Japan.

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