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Initial classification of indigenously endophyte bacteria with potential in bio-control pathogen fungi damaging in black pepper and coffee in Vietnam

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Initial results from the project in studying basic nature science “Study to develop recombination endophyte bacterial strains for disease, nematode and pest bio-controls in agricultural production” which has been funded by National Foundation for Science and Technology Development (NAFOSTED) in Vietnam in years 2017-2019 under the consultation of well-known German professors have shown one endophyte bacterial strain as significantly potential bio-control agent for prevention and suppression soil-borne fungi diseases on black pepper and coffee in Vietnam. This endophyte bacteria *Bacillus* sp. was isolated from roots of the black pepper plant and its antagonistic activity against *Phytophthora palmivora* causing fast-death disease on black pepper and *Fusarium oxysporium* f. sp. coffee partly causing the slow-death syndrome in coffee in High-Westland in Vietnam has been represented via large inhibition rings as clear zone in dual culture method. Antibiotic or novel metabolism compounds such as inturin and surfactin or unknown others are considered as taking responsibility for this high bio-effect. These possible new compounds, as well as their coding and synthesis genes, are being elicited by mass spectrometer technologies including MALDI TOF MS, LC-MS and modern biomolecular techniques as homologous recombination, CRISPR/Cas9 system II, ReD-ET. Simultaneously, the whole genome of this endophyte bacteria has been being draft sequencing by using chemical kits PureGenome™ NGS Library DNA Modifier, PureGenome™ NGS Library A-Tail Enhancer, and PureGenome™ NGS Library Amplifier via Illumina MiSeq® instrument and comparing to standard antagonistic bacterial strain *B. amyloliquefaciens* subsp. *plantarum* FZB42 (registered by ABiTEP GmbH) in order to find out other potential novel compounds.

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