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Enhanced activity of the plant-growth promoting rhizobacteria (PGPR) affect cannabis flower biomass and cannabinoid accumulation

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Plant growth-promoting rhizobacterium (PGPR) as sustainable approach has been used to improve plant growth and enhance yield and quality. However, some of isolated PGPR activated in laboratory condition are hardly colonization into host plants in field. Inoculating PGPR with microbial growth medium (King's B) could contribute to its survival under the undomesticated growth condition. Cannabis was selected to test the efficiency of PGPR because its production was prohibited which caused the shortage of knowledge about this plant. This study evaluated three individual PGPR (strain 1, strain 2 and strain 3) and King's B inoculation, and two different inoculation timings (vegetative and flower stage) on the growth and development of cannabis (cv. CBD Kush). Inoculated PGPR at vegetative stage had better performance on yield attributes, and physiological variables but flowering inoculation contributed to better cannabinoids concentration. At vegetative stage inoculation, we observed the significance difference between PGPR

inoculated and mock-inoculated (sterile water) plants. Among different PGPR inoculations, strain 3 enhanced the plant height and stem weight, while strain 2 significantly increased flower dry weight. In conclusion, a slow-growing PGPR with the presence of microbial growth medium has improved cannabis' flower yield at early inoculation; whereas the fast-growing PGPR barely changed the plant growth and yield compared with the growth medium, this result will be necessary to be considered in future studies to verify if this type PGPR produce some compounds caused the slowness of plant growth.

Speaker Biography

Dongmei Lyu is PhD student at McGill University. She has been working on the plant growth promoting rhizobacteria and associated crop (hops, and cannabis production) for three years. She has published eight peer-reviewed papers in international journals, with two currently under review.

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