


SPEECH INFORMATION (For Conference Program Book)

Topic	Biostimulants for Resilience of Agriculture: Endophytic PQQ and Cyclic Dipeptides as Examples
Abstract (No more than 350 words)	<p>Biostimulants, comprising microorganisms, their secondary metabolites, and other growth-promoting substances, enhance plant responses through multiple pathways to improve plant health and stress resistance. Recent agricultural challenges from climate change and food security concerns have highlighted biostimulants as a promising solution, attracting significant attention from academic and industrial sectors. Building upon our previous research on small-molecule metabolites of plant growth-promoting rhizobacteria through metabolomics analysis, we identified promising plant biostimulants: Cyclo (Ile-Pro) (cyclic dipeptides, CDP) and Pyrroloquinoline Quinone (PQQ). The Cyclo (Ile-Pro) effectively mitigated ROS-induced damage under stress conditions. Pot experiments confirmed that Cyclo (Ile-Pro) significantly promotes leaf expansion and health during vegetative growth while enhancing inflorescence formation and siliques yield during reproductive stages. We established its practical utility in improving plant salt tolerance and maintaining stable growth through systematic evaluation under various concentrations and salt stress conditions. Notably, the compound showed structure-specific effects, outperforming similar CDPs and their precursors in growth promotion and salt stress protection. Elemental analysis revealed that Cyclo (Ile-Pro) mitigates salt stress effects by regulating K^+/Na^+ ratios and ion distribution. On the other hand, PQQ also shows its great ability in growth promotion and abiotic stress resistance. Our studies offer theoretical support for CDPs' functional characteristics and agricultural value, advancing our understanding of plant-rhizosphere microbe molecular interactions and biostimulant function.</p>

