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## Isolation of Endophytic Fungi from Sand Dune Flora and Their Role in Plant Growth Promotion

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Endophytic fungi produce a variety of beneficial metabolites for plant growth and provide protection against pathogens. We investigated plant growth promoting activity of roots inhabiting endophytic fungi in order to evaluate their role in the survival of host plants under extreme sand dune environment of coastal regions. For this purpose, 369 fungal isolates were collected from the roots of thirteen sand dune plants. Of these, 171 fungal isolates were selected and screened for growth promoting secondary metabolites. Our results showed that 138 fungal isolates (80.7%) promoted plant height and shoot length of waito-c rice, 30 fungal isolates (17.5%) inhibited it, while 3 fungi (1.7%) showed no effect on the growth attributes. The fungal isolate *Gibberella fujikuroi* along with distilled water and Czapek broth medium were taken as controls for this experiment. It was thus concluded that a major proportion of endophytic fungi inhabiting sand dune plants produce metabolites, which are helpful in plant growth and development.

Key words: Gibberellin, endophytic fungi.

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## Gibberellin Producing Novel Endophytic Fungus Isolated from the Roots of *Ixeris repens*

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We isolated fifteen endophytic fungi from the roots of *Ixeris repens* (L.)A.Gray, a well known sand dune plant. Two fungal isolates, IR-3-3 and IR-10-3 gave promising results for plant growth promoting bioassay, of which, isolate IR-3-3 caused shoot elongation of 12.6 cm in seedlings of waito-c rice and 3.6cm in seedlings of sand dune plant *Atriplex gemelinii* as compared to wild type *Gibberella fujikuroi*, which produced shoot length of 8.65 cm for waito-c rice and 3.1 cm for *A. gemelinii* seedlings. The culture filtrates of IR-3-3 and wild type *G. fujikuroi* were analyzed for gibberellins through GC-MS-SIM. All the four bioactive gibberellins GA<sub>1</sub>, GA<sub>3</sub>, GA<sub>4</sub> and GA<sub>7</sub> were found in higher amounts in the culture filtrate of IR-3-3 (GA<sub>1</sub>: 1.95 ng/ml, GA<sub>3</sub>: 3.83 ng/ml, GA<sub>4</sub>: 6.03 ng/ml and GA<sub>7</sub>: 2.35 ng/ml) along with other physiologically inactive gibberellins including GA<sub>9</sub>, GA<sub>12</sub>, GA<sub>15</sub>, GA<sub>19</sub>, GA<sub>20</sub> and, GA<sub>24</sub>. The fungal isolate IR-3-3 was identified as a new strain of *Penicillium citrinum* (*P. citrinum* KACC43900) with 99% sequence homology, through molecular phylogenetics approach.

Key words: Gibberellin, endophytic fungi