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Gibberellin Production and Plant Growth Promotion by a New Strain of *Gliomastix murorum*

Sumera Afzal Khan, Soon-Ok Rim, Muhammad Hamayun¹, In-Jung Lee¹ and Jong-Guk Kim*

Department of Life Science and Biotechnology, Kyungpook National University, Korea

¹*Department of Agronomy, Kyungpook National University, Korea*

Endophytic fungi are known to play a vital role in the growth and development of their host plants. We isolated eleven endophytic fungi from the roots of sand dune plant *Elymus mollis* and their growth promoting ability was studied on waito-c rice and *Atriplex gemelinii*. We found that eight fungal isolates promoted growth of both plants. Fungal isolate EM-7-1 induced maximum growth promotion in waito-c rice (9.25 cm) and *Atriplex gemelinii* (3.1 cm), which was higher than wild-type *Gibberella fujikuroi*. Gibberellins analysis of EM-7-1 culture filtrate showed the presence of bioactive gibberellins GA₁ (0.32 ng/ml), GA₃ (5.76 ng/ml), GA₄ (0.82 ng/ml) and GA₇ (0.1 ng/ml) along with physiologically inactive GA₅, GA₉, GA₂₀ and GA₂₄ in higher concentrations. The fungal isolate EM-7-1 was identified as new strain of *Gliomastix murorum* (*G. murorum* KACC43902) with 99% sequence homology. This study reports the plant growth promoting ability of genus *Gliomastix* for the first time.

Key words: *Arthrinium phaeospermum*, gibberellin, endophytic fungi.

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A new strain of *Arthrinium phaeospermum* isolated from *Carex kobomugi* Ohwi is capable of gibberellin production

Sumera Afzal Khan, Soon-Ok Rim, Muhammad Hamayun¹, In-Jung Lee¹,
Choon-Bal Yu³, In-Koo Rhee² and Jong-Guk Kim*

Department of Life Science and Biotechnology, Kyungpook National University, Korea

¹*Department of Agronomy, Kyungpook National University, Korea*

²*Department of Agricultural Chemistry, Kyungpook National University, Korea*

³*Department of Food Science and Engineering, Daegu University, Korea*

We isolated nine endophytic fungi from the roots of sand dune plant *Carex kobomugi* Ohwi. The culture filtrates of these fungal isolates were screened for the presence of growth promoting metabolites by applying in small aliquotes (10 ul) on apical meristems of waito-c rice and *Atriplex gemelinii* seedlings. Five fungal isolates promoted seedling growth, of which CK-2-2 gave highest shoot elongation of 8.65 cm for waito-c rice and 3.20 cm for *Atriplex gemelinii* seedlings, almost similar to growth promotion caused by wild-type *Gibberella fujikuroi*, used as control during this experiment. Gibberellins (GA) analysis of CK-2-2 culture filtrate showed the presence of bioactive gibberellins GA₁ (0.54 ng/ml), GA₃ (8.81 ng/ml), GA₄ (4.69 ng/ml) and GA₇ (2.25 ng/ml) in considerable amounts along with physiologically inactive GA₉ (0.63 ng/ml), GA₁₂ (0.37 ng/ml), GA₁₅ (0.45 ng/ml), GA₁₉ (0.87 ng/ml) and GA₂₄ (1.81 ng/ml). Gibberellins were analyzed through gas chromatography-mass spectroscopy coupled with selected ion monitoring (GC-MS-SIM). The fungal isolate was later identified through molecular phylogenetics approach as a new strain of *Arthrinium phaeospermum* (*A. phaeospermum* KACC43901), showing 99% sequence homology with *A. phaeospermum*.

Key words: *Arthrinium phaeospermum*, gibberellin, endophytic fungi.