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

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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 GA<sub>1</sub> (0.32 ng/ml), GA<sub>3</sub> (5.76 ng/ml), GA<sub>4</sub> (0.82 ng/ml) and GA<sub>7</sub> (0.1 ng/ml) along with physiologically inactive GA<sub>5</sub>, GA<sub>9</sub>, GA<sub>20</sub> and GA<sub>24</sub> 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

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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 GA<sub>1</sub> (0.54 ng/ml), GA<sub>3</sub> (8.81 ng/ml), GA<sub>4</sub> (4.69 ng/ml) and GA<sub>7</sub> (2.25 ng/ml) in considerable amounts along with physiologically inactive GA<sub>9</sub> (0.63 ng/ml), GA<sub>12</sub> (0.37 ng/ml), GA<sub>15</sub> (0.45 ng/ml), GA<sub>19</sub> (0.87 ng/ml) and GA<sub>24</sub> (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.