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## Elementary Identification of Phenolic Allelochemicals from Dwarf Lilyturf Plant (*Ophiopogon japonicus* K.) and Their Growth-Inhibiting Effects for Two Weeds in Paddy Rice Field

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**Abstract:** Dwarf lilyturf (*Ophiopogon japonicus* K.), used as a weed-suppressing cover crop and a medicinal plant, was suggested to be a promising natural herbicide to control weeds in the rice field through its allelopathic potential. Allelopathic chemicals from the dwarf lilyturf were identified and their growth-inhibiting effects on two major weeds in the rice field in Japan were examined. High pressure liquid chromatograph (HPLC) analysis showed the existence of at least six allelopathic chemicals, viz., salicylic acid, syringic acid, syringaldehyde, vanillic acid, p-hydroxybenzoic acid and sinapic acid in dwarf lilyturf plant. The chemical detected at the highest concentration was salicylic acid (251.04  $\mu\text{g g}^{-1}$ ), which occupied more than half of total allelopathic chemicals detected (317.16  $\mu\text{g g}^{-1}$ ), followed by syringic acid (37.30  $\mu\text{g g}^{-1}$ ), syringaldehyde (13.30  $\mu\text{g g}^{-1}$ ) and sinapic acid (11.03  $\mu\text{g g}^{-1}$ ). The chemicals detected at the lowest concentration was vanillic acid (1.69  $\mu\text{g g}^{-1}$ ). Salicylic acid displayed the most inhibitory effects on germination and growth of both barnyardgrass (*Echinochloa crusgalli* L.) and monchoria (*Monochoria vaginalis* P.). This compound might play a key role in dwarf lilyturf allelopathy.

**Keywords:** [Allelochemicals](#), [Barnyardgrass](#), [Dwarf lilyturf](#), [HPLC](#), [Monchoria](#)

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