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[\[PDF \(966K\)\]](#) [\[References\]](#)**Mechanism of PR gene expression by treatment of tobacco leaves with yeast extract (AGREVO EX).**N. OBARA¹⁾²⁾, I. MITSUHARA²⁾, S. SEO²⁾, Y. OHASHI²⁾, M. HASEGAWA³⁾ and Y. MATSUURA¹⁾

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ABSTRACT

Application of AGREVO EX, a plant energizer made of yeast extract (YE), promotes root growth and suppresses plant diseases. Because no antimicrobial activity was found in the YE itself, YE induction of the plant's self-defense system has been suggested. To study the mechanism of enhanced disease resistance, the effect of YE on the expression of defense-related genes was analyzed in detached tobacco leaves. YE induced the expression of basic *PR-1*, *-2*, and *-6* genes but not the acidic *PR-1* gene. The YE solution itself produced ethylene, and ethylene emission from tobacco leaf discs was enhanced by the YE treatment. Also YE induced accumulation of PR-1, -2, and -3 proteins, and its suppression by treatment with silver thiosulfate (STS), which inhibits the perception of ethylene, suggesting the involvement of ethylene in YE-induced PR protein accumulation. The YE treatment did not induce resistance to *Tobacco mosaic virus* (TMV), but likely induced resistance to *Ralstonia solanacearum* and *Rhizoctonia solani* in tobacco plants, suggesting that YE may enhance resistance against necrotrophic pathogens.

Key words: ethylene, *Nicotiana tabacum*, pathogenesis-related (PR) proteins, *Ralstonia solanacearum*, *Rhizoctonia solani*, yeast extract

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