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研究论文

不同诱导处理后水稻悬浮细胞的活性氧变化与有关酶系的关系

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摘要 以水稻（Oryza sativa L.）感病品种浙福802为材料，研究了3种不同因子处理后其悬浮细胞中活性氧及其一些抗病酶系的变化情况。结果表明：(1) 3种因子均能导致H2O2的形成和积累。XOO.75-1处理后的H2O2含量分别在0.5和6 h出现突增现象，而XOO.76-25处理只在0.5～1 h达到一个峰值。推测XOO.75-1和浙辐802间的互作属于非亲和性互作，而XOO.76-25与浙辐802间属于亲和性互作；(2) XOO.75-1和76-25菌株处理后均能不同程度地增强POD的活性(平均为13.2 %和50.7 %)，但SOD的活性增强不显著，甚至在诱导初期有降低的现象；(3)可溶性蛋白质电泳结果表明XOO.75-1和76-25处理后72 h均可形成两条新增谱带（Rf=0.48和Rf=0.72），XOO.75-1还可诱导形成另两条新增谱带（Rf=0.53, MW=32.2 kD和Rf=0.69, MW=41.9 kD）；(4) 不同因子处理后悬浮细胞的POD和SOD发生相应变化，表现为一些谱带的增减或强度变化；(5) SA处理后悬浮细胞的H2O2有明显的积累效应，而且，SA能显著提高POD活性（平均提高32.8%）和SOD活性（平均提高46.7%）。表明SA可能通过调节H2O2的含量诱导与植物抗性有关的防御基因表达。

关键词 水稻 悬浮细胞 稻白叶枯菌 水杨酸 防卫反应

分类号 S511

Relationship between the Changes of Active Oxygen Species and Defense Enzymes in Suspension Cultured Cells Treated by Different Inducers

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Abstract Changes of active oxygen species (AOS) and some defense enzymes in suspension cultured cells of ZheFu 802 (susceptible) induced by three inducers were studied. Three factors all resulted in the accumulation of H2O2 in suspension cultured cells. H2O2 content in suspension cultured cell treated by XOO.75-1 was increased suddenly at 0.5 hour and at 6 hours after treatment, but that treated with XOO.76-25 only at 0.5 hour to 1 hour after treatment. POD activities in suspension cultured cells treated with XOO.75-1 and XOO.76-25 were both increased by 31.5 % and 49.8 % respectively. But the changes of SOD activities were not marked, even decreased at the beginning. Two new bands (Rf=0.48 and Rf=0.72) in SDS-PAGE diagram of soluble protein from suspension cultured cells treated with XOO.75-1 and XOO.76-25 appeared at 72 hours after the induction. In addition, two other bands (Rf=0.53, MW=32.2 kD; Rf=0.69, MW=41.9 kD) also appeared in the treatment of XOO.75-1. Some isoenzyme bands of POD and SOD in suspension cultured cells treated with three factors were increased or decreased in number, or changed in color. H2O2 in suspension cultured cells treated by SA was accumulated, and activities of POD and SOD increased respectively by 31.5 % and 49.8 %.

Key words Rice Suspension cultured cell Xanthomonas oryzae pv. orzae Salicylic acid Defense response

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