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[1] 栾白, 高同国, 姜峰, 等. 微生物降解褐煤产生的黄腐酸对大豆种子萌发及主要抗氧化酶活性的影响[J]. 大豆科学, 2010, 29(04): 607-610. [doi:10.11861/j.issn.1000-9841.2010.04.0607]
LUAN Bai, GAO Tong-guo, JIANG Feng, et al. Effect of Fulvic Acid (FA) from Lignite Degraded on Germination Rate and Activities of Main Antioxidases in Soybean Seedlings[J]. Soybean Science, 2010, 29(04): 607-610. [doi:10.11861/j.issn.1000-9841.2010.04.0607]

点击复制

微生物降解褐煤产生的黄腐酸对大豆种子萌发及主要抗氧化酶活性的影响

《大豆科学》 [ISSN:1000-9841 /CN:23-1227/S] 卷: 第29卷 期数: 2010年04期 页码: 607-610 栏目:
出版日期: 2010-08-25

Title: Effect of Fulvic Acid (FA) from Lignite Degraded on Germination Rate and Activities of Main Antioxidases in Soybean Seedlings

文章编号: 1000-9841 (2010) 04-0607-04

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关键词: 大豆 (KeySearch.aspx?type=Keyword&Sel=大豆); 褐煤黄腐酸 (KeySearch.aspx?type=Keyword&Sel=褐煤黄腐酸); 微生物降解 (KeySearch.aspx?type=Keyword&Sel=微生物降解); 抗氧化酶 (KeySearch.aspx?type=Keyword&Sel=抗氧化酶)

Keywords: Soybean (KeySearch.aspx?type=Keyword&Sel=Soybean); Fulvic acid (KeySearch.aspx?type=Keyword&Sel=Fulvic acid); Biodegradation (KeySearch.aspx?type=Keyword&Sel=Biodegradation); Antioxidase (KeySearch.aspx?type=Keyword&Sel=Antioxidase)

分类号: S565.1

DOI: 10.11861/j.issn.1000-9841.2010.04.0607 (http://dx.doi.org/10.11861/j.issn.1000-9841.2010.04.0607)

文献标志码: A

摘要: 研究了微生物降解褐煤产生的黄腐酸 (FA) 对大豆萌发过程中过氧化物酶 (POD)、过氧化氢酶 (CAT)、超氧化物歧化酶 (SOD) 的影响, 以期揭示FA促进种子萌发的机理。结果表明: 适宜浓度FA可以提高大豆萌发率, 显著增加种子POD、CAT及SOD的活性。FA浓度为100 mg·kg⁻¹时, CAT、SOD活性分别提高32.15%、24.5%; FA浓度为200 mg·kg⁻¹时, 大豆萌发率比对照提高34.6%, 并且POD活性增加19.92%。而高浓度的黄腐酸对大豆萌发及抗氧化酶活性产生抑制作用。FA表现出类似生长调节剂的性质, 适宜浓度的黄腐酸能提高大豆种子的萌发率, 显著提高其抗氧化酶的活性, 对种子萌发起到促进作用。

Abstract: The antioxidantase system can remove reactive oxygen and play an important role in the process of soybean germination. To study how fulvic acid (FA), produced by microbial degraded lignite, can improve the germination, Spectrophotometry and nitroblue tetrazolium test (NBT) illumination method were taken to detect the activities of peroxidase (POD), catalase (CAT) and superoxide dismutase (SOD). The results showed when the concentration of FA was 100 mg·kg⁻¹, the activities of CAT and SOD were improved by 32.15% and 24.5%, respectively. The germination ratio increased by 34.6% under a condition where the concentration of FA was 200 mg·kg⁻¹, and the activity of POD was also increased by 19.92% under this FA concentration. In contrast with the promotion effect, solution with high FA concentration can restrain the activities of antioxidantase. The study has shown that appropriate concentration of FA from lignite degraded by microorganism can improve the germination of soybean and increase the activities of POD, CAT and SOD significantly. FA is something like plant growth regulator, the appropriate concentration of FA can improve the germination ratio of soybean seed and improve its activities of antioxidantase apparently.

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备注/Memo 基金项目: 国家高技术研究发展计划资助项目(2006AA10A213); 国家基础科学人才培养基金资助项目(J0730639); 科技部成果转化资助项目(2008360075)。

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更新日期/Last Update: 2014-09-14

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