

李鹏霞,胡花丽,王毓宁.外源NO对采后绿芦笋木质化和抗氧化能力的影响[J].农业工程学报,2012,28(9):264-269

### 外源NO对采后绿芦笋木质化和抗氧化能力的影响

#### Effects of exogenous nitric oxide on lignification and anti-oxidation activity of postharvest green asparagus

投稿时间: 2011-06-25 最后修改时间: 2011-10-09

中文关键词: [一氧化氮](#),[机理](#),[农产品](#),[绿芦笋](#),[硝普钠](#),[木质化](#),[抗氧化能力](#)

英文关键词: [nitric oxide](#) [mechanisms](#) [agricultural products](#) [green asparagus](#) [sodium nitroprusside](#) [lignification](#) [anti-oxidation activity](#)

基金项目:江苏省农业科技自主创新资金项目(cx(09)629)

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中文摘要:

为探讨NO处理对采后绿芦笋木质化合成的调控机理。以0.2 mmol/L的硝普钠为一氧化氮供体,以蒸馏水处理为对照,研究了NO对采后绿芦笋总酚、木质素含量;木质素合成关键酶(苯丙氨酸解氨酶、肉桂醇脱氢酶、过氧化物酶、多酚氧化酶);抗氧化能力(1,1-二苯基-2-三硝基苯肼自由基清除率、超氧阴离子自由基(O<sub>2</sub><sup>-</sup>)清除率、羟基自由基(·OH)清除率)及膜透性的影响,结果表明,与对照相比,NO处理可延缓采后绿芦笋木质素含量和膜透性的增加,抑制肉桂醇脱氢酶和多酚氧化酶活性,增强抗氧化能力,诱导过氧化物酶活性增强,但对苯丙氨酸解氨酶活性和总酚含量的影响不显著。说明NO处理是通过抑制肉桂醇脱氢酶和多酚氧化酶活性、提高抗氧化能力而延缓采后绿芦笋的木质化进程。研究结果可为NO在绿芦笋保鲜中的应用提供理论依据和技术方法。

英文摘要:

In order to elucidate the adjustment mechanism of nitric oxide(NO) on the lignification of postharvest green asparagus, using sodium nitroprusside(SNP) of 0.2 mmol/L as a nitric oxide donor, and green asparagus treated with distilled water as controls, the paper investigated the effects of nitric oxide treatment on total phenol and lignin content, the relevant enzymes of lignin synthesis including PAL, CAD, PPO and POD, the anti-oxidation activity including the DPPH radical scavenging activity, and the superoxide radical scavenging activity and hydroxyl radical scavenging activity and membrane permeability. The result showed that NO treatment could delay the increase of lignin content and membrane permeability, inhibit the activities of CAD and PPO, increase the anti-oxidation activity, induce a significant increase in POD activity. However, there was no significant effect on PAL activity and total phenol content compared to control. This proved that NO treatment can delay the lignification of postharvest green asparagus through inhibiting the activities of CAD and PPO and increasing the anti-oxidation activity. The results can provide a theoretical basis and technical method for application of NO in green asparagus storage.

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