

园艺—研究报告

Cd胁迫对2种基因型番茄幼苗活性氧清除系统的影响

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摘要:

为了探明Cd对不同基因型番茄活性氧清除系统影响的基因型差异,利用人工气候箱内水培的方法,测定了0, 15, 30 mg/L Cd处理对2种基因型番茄(高积累型‘以色列189’,低积累型‘合作903’)幼苗活性氧清除系统的影响。结果表明,Cd处理对番茄活性氧清除系统影响显著,且因品种、部位及酶而不同:高Cd积累品种‘以色列189’茎叶POD、CAT随Cd浓度增加而显著增加,并显著高于低Cd积累品种‘合作903’,而‘合作903’则有降低趋势;茎叶SOD都是先增加后降低。通过分析,发现‘以色列189’防卫酶对Cd耐性强于‘合作903’,SOD对Cd耐性不如POD和CAT。‘以色列189’因其较强的抗氧化能力及GSH含量,在高积累前提下,没有产生过多的脂质过氧化产物TBARS。

关键词: 幼苗

The Effect of Cadmium Stress on Two Genotype Tomato Seedlings

Abstract:

In order to investigate the different response of antioxidant system to Cd stress in relation to genotype in different tomato cultivars, Hydroponically grown tomato young seedlings under 0, 15 and 30 mg/L Cd stress were used, we detected antioxidant system in two tomato (*Lycopersicon esculentum* Mill) seedlings (hyper-accumulator ‘YSL189’ and low-accumulator ‘HZ903’). The results showed that the activity of antioxidant enzyme varied significantly because of Cd stress in relation to different cultivars, tissues and enzymes. For ‘YSL189’, the activities of POD and CAT in above-ground tissue were increased followed the addition of Cd in growing medium, and get higher values significantly than ‘HZ903’ which decrease tendency in the two enzymes; both cultivars posses increased and then decreased SOD in stem-leaves tissue. We made the conclusion that according to the different antioxidant enzymes, the POD and CAT can adopt to higher Cd concentration than SOD, especially in high-accumulator ‘YSL189’. Because of higher antioxidant enzymes activities and higher GSH level, the ‘YSL189’ get no more TBARS than ‘HZ903’ base on the higher Cd accumulation.

Keywords: seedlings

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