

研究报告

不同浓度铜对紫背萍和青萍色素含量及抗氧化酶系统的影响

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摘要

通过水培试验研究了不同浓度的重金属Cu对紫背萍(*Spirodela polyrrhiza*)和青萍(*Lemna minor*)的色素含量和抗氧化酶系统的影响.结果表明,低浓度Cu(0.056 mg·L⁻¹)的处理下,紫背萍和青萍的叶绿素a、叶绿素b和叶绿素(a+b)的含量均出现不同程度的增加,分别高出其对照11%、46%、22%和8%、15%、11%,而在高浓度Cu(0.18~5.60 mg·L⁻¹)的处理下,上述色素含量均显著下降,平均下降幅度分别达63%、62%、65%和46%、44%、45%.紫背萍体内丙二醛(MDA)含量为青萍的2.57倍.两种浮萍的超氧化物歧化酶(SOD)、过氧化氢酶(CAT)和过氧化物酶(POD)的活性均随Cu浓度的增加而呈先升后降的趋势,紫背萍体内3种酶活性在Cu浓度仅为0.18 mg·L⁻¹时即达峰值,随后则大幅下降,而青萍体内3种酶活性却在Cu浓度分别升高到0.56、1.0和1.0 mg·L⁻¹时才达到峰值.可见,在Cu胁迫下,紫背萍受Cu毒害较青萍深,且其体内抗氧化酶系统也较青萍敏感.

关键词 [铜](#) [紫背萍](#) [青萍](#) [色素](#) [抗氧化酶系统](#)

分类号

Effects of different concentration copper on pigment content and antioxidase system of *Spirodela polyrrhiza* and *Lemna minor*

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Abstract

The study with water culture showed that when treated with 0.056 mg Cu·L⁻¹,the chlorophyll a,b and (a+b) contents in *Spirodela polyrrhiza* and *Lemna minor* were increased by 11%,46% and 22%,and 8%,15% and 11%,while under 0.15~5.6 mg Cu·L⁻¹,the contents were decreased by 63%,62% and 63%,and 46%,45% and 45%,respectively,compared with no copper added.The malondialdehyde (MDA) content in *S.polyrrhiza* was 2.75 times higher than that in *L.minor* averagely.The superoxide dismutase (SOD),catalase (CAT) and peroxidase (POD) activities in both *S.polyrrhiza* and *L.minor* all increased first,but decreased then with increasing copper concentration.For *S.polyrrhiza*,the activities of test enzymes were the highest at 0.18 mg Cu·L⁻¹,but for *L.minor*,only when the Cu concentrations were up to 0.56,1.0 and 1.0 mg·L⁻¹,the activities of SOD,CAT and POD got to their peak values,respectively.It was concluded that higher concentrations of copper caused more damage to *S.polyrrhiza* than to *L.minor*,and the antioxidase system of the former was much more sensitive to the copper stress than that of the latter.

Key words

扩展功能

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