

海州香薷和鸭跖草铜吸收机理

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Copper uptake mechanism of *Elsholtzia splendens* and *Commelina communis*

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摘要 研究了解偶联剂、P-型ATP酶抑制剂、离子通道抑制剂、蛋白合成抑制剂和缺铁缺锌诱导对海州香薷(*Elsholtzia splendens*)和鸭跖草(*Commelina communis*)铜吸收的影响。结果表明,海州香薷对铜的富集能力高于鸭跖草,但鸭跖草对铜的运输能力大于海州香薷。解偶联剂2,4-二硝基苯酚(DNP)和P-型ATP酶抑制剂钒酸钠(Na_3VO_4)对海州香薷和鸭跖草铜吸收均有一定的抑制作用,说明两种植物对铜可能存在主动吸收。钙离子通道抑制剂 LaCl_3 对海州香薷铜吸收有抑制作用,而对鸭跖草铜吸收没有抑制作用;蛋白合成抑制剂放线菌酮(CHD)对海州香薷铜吸收没有抑制作用,而显著抑制了鸭跖草对铜的吸收。说明海州香薷铜吸收与钙离子通道密切相关。缺铁诱导大大提高了海州香薷与鸭跖草对铜的吸收。低浓度铜处理下,缺锌诱导对两种植物铜吸收影响不大;但高浓度铜处理下,缺锌诱导促进了铜吸收。

关键词: 海州香薷 鸭跖草 铜吸收 抑制剂 海州香薷 鸭跖草 铜吸收 抑制剂

Abstract: The present paper investigated the effect of the uncoupler of oxidative phosphorylation, P-type ATPase (inhibitor), ion channels inhibitor, protein synthesis inhibitor, Fe deficiency, and Zn deficiency on Cu uptake in *E. haichowensis* and *C. communis*. The results showed Cu accumulation ability of *E. haichowensis* was higher than that of *C. communis*, while the Cu transport ability of *E. haichowensis* was lower than that of *C. communis*. Both the (uncoupler) of oxidative phosphorylation DNP and P-type ATPase inhibitor Na_3VO_4 could inhibit Cu uptake, which showed properly initiative Cu uptake in the two plants. Ca^{2+} ion channel inhibitor LaCl_3 inhibited Cu uptake of *E. haichowensis*, while did not inhibit Cu uptake of *C. communis*, which demonstrated Cu uptake of *E. haichowensis* was related to Ca^{2+} ion channel, while Cu uptake of *C. communis* was not. On the contrary, Cu uptake of *C. communis* was inhibited by the protein synthesis inhibitor cycloheximide, while Cu uptake of *E. haichowensis* was not. Cu uptake in two plants was promoted greatly by Fe deficiency. Cu uptake was hardly affected by Zn deficiency at low Cu, while Cu uptake was promoted at high Cu.

Keywords:

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