不同葉色之水耕芥藍其葉中硝酸鹽之積聚

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摘要

本研究的目的是檢驗不同葉色之水耕芥藍其光合能力與葉中的硝酸鹽積聚之關係。 葉色從深綠到黃綠的九種水耕芥藍(Brassica oleracea L. var. alboglabra (Bailey) Musil)被用來測定其光合能力及葉中的硝酸鹽之積聚。黃綠色芥藍較深綠色芥藍葉中含有較少的葉綠素、可溶性糖類，並且光合作用速率也較低。在夏、秋、及冬季，處於低光照的環境下，黃綠色芥藍葉中含有較高的硝酸鹽含量。綜合實驗數據顯示，黃綠色芥藍葉中的硝酸鹽積聚主因是其光合作用無法產生足夠之還原力及糖來活化硝酸鹽還原酶。

關鍵字：芸苔，芥藍，葉綠素，葉色，硝酸鹽堆積，光合能力

I Leaf nitrate accumulation of Chinese kale (Brassica oleracea L. var. alboglabra (Bailey) Musil) cultivars with different leaf color

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Abstract

The purpose of this study was to determine the relationship between photosynthetic capacity and leaf nitrate accumulation of chlorophyll-deficient Chinese kale cultivars. Nine cultivars of Chinese kale (Brassica oleracea L. var. alboglabra (Bailey) Musil), with leaf color ranging from dark green to yellow green, were used to determine the photosynthetic capacity and leaf nitrate accumulation. Compared to the genotypes with dark green leaves, the genotypes with yellow green leaves showed lower chlorophyll and soluble sugar concentration in leaves, had lower light-saturated photosynthetic rate. These genotypes showed higher nitrate concentration in the lower light intensity conditions, i.e. in 50% shading on sunny days in summer as well as in no shading on sunny days in autumn and winter. The results indicated that nitrate accumulation in leaves was mainly caused by the disablement to supply enough reduction power and sugar to activate nitrate reductase in photosynthesis of chlorophyll-deficient Chinese kale.

Keywords：Brassica, Chinese kale, chlorophyll, leaf color, nitrate accumulation, photosynthetic capacity