

油茶品种生长时期对炭疽病的抗性研究

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摘要: 油茶 (*Camellia oleifera* Abel.) 是中国南方地区重要的木本油料树种。油茶炭疽病 (*Colletotrichum gloeosporioides* Penz.) 在果实上发生普遍且严重, 导致果实减产可达 50% 以上, 且不同的油茶品种抗性不同。本研究的目的是通过找出在油茶生长季节与抗性较相关的生理生化参数来探讨油茶品种抗病机理。在生长季节不同月份, 对不同抗性品种的果实内含物 (单宁、花青素、可溶性总糖), pH、缓冲容量, 三种酶 (苯丙氨酸解氨酶、多酚氧化酶、过氧化物酶) 活性及清除自由基能力进行了测定分析。结果表明, 花青素含量、可溶性糖含量以及果皮清除 DPPH 自由基能力与抗炭疽病关系密切, 抗病品种的含量明显偏高, 而且比易感病品种高出近 2 倍。清除自由基的研究表明, 高抗品种的果皮提取液在 2.0mg/mL 时对自由基清除率较高, 加入样品 20min 后数值稳定在 $89.43 \pm 0.34\% \sim 91.46 \pm 0.32\%$ 之间, 显著高于感病品种。高抗品种三种酶活均上升速度快, 持续增长, 而中抗和高感品种酶活先上升后下降。不同抗性品种的果皮单宁含量、pH 和缓冲容量差异不显著。该项研究将有利于安徽地区油茶抗性品种的选育和抗病机理的深入了解。

关键词: 油茶, 炭疽病, 单宁, 花青素, 可溶性糖, pH 与缓冲容量, 酶活性

Variation of Physiological and Chemical Characteristics at Developmental Stage in Different

Disease-resistant Varieties of *Camellia oleifera*

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Abstract: *Camellia oleifera* Abel. is an important edible oil tree species from Southern China. Anthracnose, caused by *Colletotrichum gloeosporioides* (Penz.), is responsible for more than 50% of *C. oleifera* production loss, and *C. oleifera* varieties differ in their resistance to anthracnose. The aim of this study was to assess resistance mechanisms by monitoring physiological and biochemical parameters of differentially resistant cultivars during the development of *C. oleifera*. *C. oleifera* fruit coats were analyzed between May and September for tannins, anthocyanins, soluble sugar content, pH, buffer capacity, activity of three enzyme s(Phenylalanine ammonia lyase; polyphenol oxidase; peroxidase) and free radical scavenging capacity. Anthocyanins,

soluble contents and free radical scavenging capacity were related to anthracnose resistance, with anthocyanins and soluble sugar contents of the resistant varieties nearly twofold higher than those of susceptible varieties. The results of free radical scavenging capacity showed that extracts from highly resistant varieties of *C. oleifera* fruit coats performed more efficiently in the scavenging of free radicals than those from susceptible varieties. The three enzyme activities of highly resistant varieties rose rapidly and continuously, while those of medium resistant and highly susceptible varieties increased initially and then decreased. Tannins, pH and buffer capacity showed no significant differences between different cultivars. This study broadens the understanding of disease resistance mechanisms in *C. oleifera*.

Key words: *C. oleifera*; anthracnose; tannins; anthocyanins; soluble sugars; pH and buffer capacity; enzyme activity.