

专论与综述

## 植物次生代谢及其与环境的关系

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**摘要** 人类对植物次生代谢产物(天然产物)的早期研究源于它们的应用价值,近些年来人们越来越认识到植物次生代谢产物广泛的生物学效应,开始重新评价这些化合物在植物生命活动以及生态系统中可能扮演的角色。植物的次生代谢是植物在长期进化中与环境(生物的和非生物的)相互作用的结果,次生代谢产物在植物提高自身保护和生存竞争能力、协调与环境关系上充当着重要的角色。介绍了植物次生代谢及其产物的特点,概述了植物次生代谢与温度、水分、光照、养分、CO<sub>2</sub>浓度、UV-B辐射、环境污染等非生物环境以及与化学防御、化感作用、菌根共生、微生物病害的关系。研究植物次生代谢与环境的关系,可以从更深的层次发掘植物与环境的内在联系,为全面、深入认识植物与环境的相互关系提供新的研究途径,同时也有利于人类更有效、合理地利用植物的次生代谢产物。

**关键词** [植物次生代谢](#); [生物环境](#); [非生物环境](#)

**分类号** [Q142](#), [Q945.79](#), [Q948](#)

## Plant secondary metabolism and its response to environment

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**Abstract** Early studies on plant secondary metabolites (natural products) were generally resulted from their application values. In recent years the bioactivities of secondary metabolites have been more and more realized and their potential roles in plant living activities and ecosystem have been reevaluated. Plant secondary metabolism is a consequence of the interaction between plants and environments (biotic and abiotic) in the long process of plant evolution. Plant secondary metabolites play important roles for plants to improve defensive and competitive abilities as well as correspond to the environments. In this overview, we briefly introduced the characteristics of plant secondary metabolism, summarized the relationship between secondary metabolism and abiotic factors such as temperature, water, light, nutrient, CO<sub>2</sub> concentrations, UV-B radiation and environmental pollutions, and the relationship between secondary metabolism and chemical defence, allelopathy, mycorrhizal symbiosis and micropathogens. Research on the interaction between plant secondary metabolism and environments may explore more profound understandings and new approaches to comprehensive correlations between plants and environments. It also may benefit the efficient and rational utilization of the secondary metabolites.

**Key words** [plant](#) [secondary](#) [metabolism](#) [\\_](#) [biotic](#) [environment](#) [\\_](#) [abiotic](#) [environment](#)

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