

Martin Luckner

Secondary Metabolism in Microorganisms, Plants, and Animals

Third Revised and Enlarged Edition



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Secondary Metabolism In Microorganisms Plants And Animals

Margaret F. Roberts



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Secondary Metabolism in Microorganisms, Plants and Animals M. Luckner, 2013-12-11 Many of the reactions and compounds involved in metabolism are almost identical in the different groups of living organisms They are known as primary metabolic reactions and primary metabolic products In addition however a wide variety of biochemical pathways are characteristic of only a few species of organisms of single chemical races or even of a certain stage of differentiation of specialized cells Such pathways are collectively referred to as secondary metabolism and the compounds formed are called secondary products Secondary products are frequently revealed by their color smell or taste They are responsible for the flavor of most foodstuffs and beverages and for the color and fragrance of flowers and fruits Many of them are part of the materia medica e g alkaloids cardiac glycosides antibiotics or compounds acting as hormones Others are used by industry e g rubber tannins and cellulose This book treats the organization and significance of biosynthesis storage transformation and degradation of the most important groups of secondary products in microorganisms plants and animals It shows that the formation of secondary products is a common characteristic of specialized cells brought about by the action of special enzymes encoded by specific genetic material It demonstrates that the biosynthesis of secondary products is typically without significance for the individual producer cell but may play a decisive role in the development and function of the producer organism as a whole

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variety of biochemical pathways are characteristic of only a few species of organisms of single chemical races or even of a certain stage of differentiation of specialized cells. Such pathways are collectively referred to as secondary metabolism and the compounds formed are called secondary products. Secondary products are frequently revealed by their color, smell or taste. They are responsible for the flavor of most foodstuffs and beverages and for the color and fragrance of flowers and fruits. Many of them are part of the materia medica e.g. alkaloids, cardiac glycosides, antibiotics or compounds acting as hormones. Others are used in the industry e.g. rubber, tannins and cellulose. This book treats the organization and significance of biosynthesis, storage, transformation and degradation of the most important groups of secondary products in microorganisms, plants and animals. It shows that the formation of secondary products is a common characteristic of specialized cells brought about by the action of special enzymes encoded by specific genetic material. *Secondary Metabolism in Plants and Animals* Martin Luckner, 1972 **Secondary Metabolism and Cell Differentiation** M.

Luckner, L. Nover, H. Böhm, 2013-06-29 1 Secondary Metabolism and Differentiation. In addition to the primary metabolic reactions which are similar in all living beings, formation and breakdown of nucleic acids and proteins as well as of their precursors of most carbohydrates of some carboxylic acids etc. a vast number of metabolic pathways lead to the formation of compounds peculiar to a few species or even to a single chemical race only. These reactions in accord with CZAPEK 1921 and PAECH 1950 are summed up under the term secondary metabolism and their products are called secondary metabolites. The wide variety of secondary products formed in nature includes such well known groups as alkaloids, antibiotics, cardiac glycosides, tannins, saponins, volatile oils and others. A considerable number of them are of economic importance in therapeutics or technology. Although secondary products are produced by microorganisms, higher plants and animals, LUCKNER 1972, most of the substances are found in the plant kingdom. The lack of mechanisms for true excretion in higher plants may result in this unequal distribution, the waste products of metabolism in plants instead being accumulated in the vacuoles, the cell walls or in special excretory cells or spaces of the organism. metabolic excretion of FREY, WYSSLING 1935, 1970, MOTHES 1966a, b, 1972, LUCKNER et al 1976. Many secondary substances have however a direct biologic function. They can be regulatory effectors e.g. *Secondary Metabolism in Microorganisms, Plants, and Animals* Martin Luckner, 1984. General aspects. Methods used in the investigation of secondary metabolism. Important groups of secondary metabolic enzymes. Structure, biosynthesis and metabolism of secondary products in microorganisms, plants and animals. The significance of secondary metabolism and secondary products for the producer organisms. *The Secondary Metabolism of Plants and Animals* Martin Luckner, 1972. *Secondary Metabolism in Microorganism, Plants, and Animals*, 1984.

Advances in Applied Microbiology, 1989-08-23. *Advances in Applied Microbiology* *Plant Cell Biotechnology* Rudolf Endress, 2013-04-18. In the past there were many attempts to change natural foodstuffs into high value products. Cheese, bread, wine and beer were produced traditionally using microorganisms as biological tools. Later people influenced the

natural process of evolution by artificial selection In the 19th century observations regarding the dependence of growth and reproduction on the nutrient supply led to the establishment of agricultural chemistry Simultaneously efforts were directed at defining the correlation between special forms of morphological differentiation and related biochemical processes New experimental systems were developed after the discovery of phytohormones and their possible use as regulators of growth and differentiation In these systems intact plants or only parts of them are cultivated under axenic conditions These methods called in vitro techniques were introduced to modern plant breeding In the field of basic research plant cell cultures were increasingly developed and the correlations between biochemical processes and visible cell variations were explored further It should be possible to manipulate the basic laws of regulation and the respective biochemical processes should be regarded as being independent of morphological processes of plant development Naturally Occurring Bioactive Compounds ,2006-09-25 This timely book provides an overview of natural products botanicals used for the management of insect pest and diseases It will help readers to update and widen their knowledge about natural products and their bioactivities against plant pathogens The volume explores activity chemistry toxicity and geographic distribution of plants Discussions concerning the methodology used for the detection of active principles their mode of action and commercial prospects are of utmost importance and worthy of note Focuses on recent achievements in natural bioactives Global coverage of natural products plants Targets the most important issues of natural botanicals biocides Includes innovative ideas with lucid explanations Contains specialized chapters such as natural control of multi drug resistant organisms anti salmonella agents natural house dust mite control agents and naturally occurring anti insect proteins etc Covers research on bioactives From Lab to Field and Field to Market Includes eco friendly and economically viable herbal technology

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