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BOOK REVIEW*

KUSHWAHA, Rajendra K.S. & GUARRO, Josep - Biology of dermatophytes and other keratinophilic fungi. Bilbao, Berekintza, 2000. 174p. ilus. ISBN: 84-607-0711-3. (First published in 2000, by Revista Iberoamericana de Micología).

Isolation of keratinophilic fungi from soil dates back to the middle of the century when a hair baiting technique was described. However, the existence of their relatives is of ancient origin. Pathogenic dermatophytes probably arose from soil borne non-pathogenic ancestors, possibly similar in habitat and adaptation to the human host, and accompanied by a gradual loss of sexuality.

The past two decades has witnessed considerable evolution both of keratinophilic fungi and of the processes by which they degrade keratin and become associated with human and animal diseases. The keratinophilic fungi include true fungi that vigourously degrade keratin as well as some more important human pathogenic dermatophytes. Most of them belong to Onygenales and taxonomy of these genera is often confusing due to several overlapping characteristics.

There has been some taxonomic revision of teleomorphs and anamorphs based on few representative studies and/or geographical regions. None of these are comprehensive. Distinguishing taxa of keratinophites requires morphological information both from anamorphs and teleomorphs. For species of medical importance only anamorphs are used, teleomorphs being difficult to organise.

We feel that a beginner needs to know first how keratinophilic fungi are constructed and how they reproduce, then their subsequent action. The integration of morphology and molecular data in an attempt to develop a more natural taxonomic scheme of the keratinophilic fungi becomes, of course, of paramount importance, followed by knowledge of their distribution in natural habitats and their parasitic potential. Newly-emerging non-dermatophytic keratin-colonizing fungi which actively invade and degrade keratin are now the subject of investigation because of their medical importance and their ability to decompose keratin *in vitro* and in soil. Keratinous substrates which enter the soil environment decompose slowly and act as a reservoir for pathogenic fungi. Keratin decomposition in soil leads to an increase in carbon and the nitrogen ratio of soil. They are therefore fast-growing nonpathogenic keratinophilic fungi which, it is proposed, should be utilized for the recycling of keratin in soil and may be exploited for their biotechnological potential in industry.

An integrated approach towards understanding the multifaceted significance of keratinophilic fungi is required. In the past few years several good publications on keratinophilic fungi and their relatives have come up with an attempt to present a fully integrated picture through multidisciplinary approaches. We now see the need to synthesize the knowledge that has accumulated during studies of this specific group of organisms and to bring attention to their significance to human beings.

The arrangement of chapters in accordance with the objectives of the volume begins with keratinophilic fungi and then relates them to the diseases rather than other way round. The volume contains 21 chapters on the traditional and molecular approach to taxonomy, evolution, geographical distribution, ecology in waste contamination and aquatic habitats, with emphasis on the risk of infection associated with a contaminated environment and the ability of cycloheximide resistant strains to degrade human hair. The monograph also includes reviews on *Trichophyton mentagrophytes* and *Chrysosporium* including its biotechnological potential and phylogenetic relationships based on rDNA internal transcribed spacer sequence, the ultrastructure of ascosporogenesis of *Arthroderma simii*, the physiology of keratinophilic fungi, keratin degradation, the association of keratinophylic fungi with birds and domestic animals, the role of non dermatophytic fungi in human infection, model systems for the study of invasion of human keratin, the epidemiology of nail infection, recent ultrastructural findings on rare hair infection, *in vitro* susceptiblity of non dermatophytic fungi, the management of dermatophytosis and histoplasmosis and the mechanism of action and toxicity of systemic antifungal drugs. The articles are the product of years of thoughtful research and analysis in this particular field.

We hope that this volume will provide both up-to-date technical information and a stimulus for future research into the dermatophytes and keratinophilic fungi for those with a professional interest including microbiologists, dermatologists and clinical pathologists. For students, general mycologists and interested laymen we have tried to provide a perspective on these fungi as an academically challenging and immensely important fungal group.

We wish to express our sincere appreciation to the authors for their cooperation in time-consuming and thorough preparation of their articles. This publication would not have been possible without the active cooperation of the Revista Iberoamericana de Micologia to whom we are also grateful.

Copy of the Preface
Kanpur and Reus, April 2000
The Editors

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*This book is available at the Library of the Instituto de Medicina Tropical de São Paulo