

Antibacterial agents from actinomycetes - A Review

Girish Badrinath Mahajan¹, **Lakshmi Balachandran²**

¹*Anti-infective screening and Prokaryote isolation, Department of Natural Products, Piramal Life Sciences Limited, 1-Nirlon Complex, Off Western Express Highway, Goregaon (East), Mumbai-400 063, India,* ²*Karmaveer Bhaurao Patil College, Affiliated to University of Mumbai. Sector 15-A, Vashi, Navi Mumbai - 400 703, India*

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1. ABSTRACT

The discovery of Penicillin in 1928 and that of Streptomycin in 1943, has been pivotal to the exploration of nature as a source of new lead molecules. Globally, the microbiologist today is acknowledged as a crucial player in the drug discovery program. The microbial products, especially those from actinomycetes have been a phenomenal success for the past seven decades. Bioprospecting for new leads are often compounded by the recurrence of known antibiotics in newer microbial isolates. Despite all these deterrents, actinomycetes have proved to be a sustained mine of novel antibiotics, which selectively destroys the pathogens without affecting the host tissues. Each of these antibiotics is unique in their mode of action. Their versatility and immense economic value is something, which is extremely

noteworthy. The anti-infective turn-over of over 79 billion US dollars in 2009, includes about 166 antibiotics and derivatives such as the Beta-lactam peptide antibiotics, the macrolide polyketide erythromycin, tetracyclines, aminoglycosides, daptomycin, tigecycline, most of which are produced by actinomycetes (1). Actinomycetes continue to play a highly significant role in drug discovery and development. Among the bioactive compounds that have been obtained so far from microbes, 45% are produced by actinomycetes, 38% by fungi and 17% by unicellular eubacteria (2). Further many chemically synthesized drugs owe their origin to natural sources. In this review article, we highlight the recent antibiotics from actinomycetes with emphasis on their source, structures, activity, mechanism of action and current status.