



ISOLATION, CHARACTERIZATION AND BIOLOGICAL ACTIVITIES OF EGYPTIAN MYXOBACTERIA

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Abstract

Myxobacteria are aerobic, chemotrophic Gram- negative δ -proteobacteria that most commonly inhabit soils. Within the last three decades, Myxobacteria have been established as proficient producers of secondary metabolites that exhibit various biological activities. This thesis reports the first Egyptian study on myxobacteria. The objectives of this present study were (1) isolate myxobacteria from some natural sources, (2) screen the isolates for some biological activities, and (3) characterize the promising isolates.

One hundred and thirty *Myxobacterium* were isolated from different 16 natural sources and 102 isolates were purified. In vitro screening showed that 94% of the 102 isolates inhibited growth of bacteria and 92% of the 102 isolates inhibited growth of fungi and 79% inhibited growth of *candida albicans*. Based on the 3 screens results, 20 myxobacterial isolates showed best performing were chosen for in vitro screening their crude methanol extracts for anti-cancer activity against 4 human carcinoma cell lines. All extracts exhibited varying tumor inhibition percentage, but extracts exhibited only 21 potent activities ($\geq 70\%$ tumor inhibition rate). The 20 isolates were tested for their ability to produce volatile metabolites and their effect on fungi. All isolates released volatile metabolites which strongly inhibited growth of fungi, the 20 myxobacterial isolates were screened for their ability to produce phytotoxic metabolites and the screening indicated that all isolates inhibited both seed germination and root length of radish and two weeds. Finally, results of characterization of the chosen 20 isolates suggest that there are isolates represent different species may be related to different genera.

Keywords: Egypt, myxobacteria, antimicrobial, anticancer, phytotoxicity.

