

ANTIFUNGAL ACTIVITY OF EXTRACTS OF SACCHAROPOLYSPORA AND MICROMONOSPORA FROM INVERTEBRATES IN LAKE BAIKAL

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Introduction. Fungal infection is a challenging problem, especially for immunocompromised patients such as those with diabetes, cancer, and tuberculosis [5]. Since the golden age of antibiotics, scientists have long been on the search for better antifungal compounds so that immunocompromised patients would have a better quality of life [5]. This search has led us to sources of antifungal compounds from natural sources [13,4]. Actinobacteria associated with crustaceans (amphipods) and gastropods have been found to produce antifungal molecules to help their hosts fight against pathogenic fungi, which they ingest together with organic matter. In this study, *Micromonospora* and *Saccharopolyspora* were obtained from *Ommatogammarus ablinus* and *Benedictia* sp. respectively [1,4].

The main part. The actinobacterial strains were obtained from the Irkutsk State University Research Institute of Biology. *Saccharopolyspora* sp. and *Micromonospora* sp. were cultivated in Mannitol Soyflour (MS) with CaCO₃ (20 mM), MgSO₄·7H₂O (2 mM), K₂HP0₄ (100 mM), and NaCl (68 mM) for 10 days, after which the cells were precipitated and an extract using ethyl acetate was obtained from the supernatant [1, 4]. The dry extracts were dissolved in a 1% dimethyl sulfoxide (DMSO) solution to a concentration of 50 µg/ml and used for antimicrobial testing. An antimicrobial assay was done against bacterial pathogens (*Staphylococcus aureus*, *Escherichia coli*, and *Pseudomonas aeruginosa*) and a fungal pathogen (*Candida albicans*) using the agar-well diffusion method, and zones of inhibition were recorded. Tetracycline (10 µg/ml) for bacteria, fluconazole (50 µg/ml) for fungi were used as positive controls, and 1% DMSO solution was used as a negative control [2]. Extracts from *Micromonospora* and *Saccharopolyspora* showed zones of growth inhibition of 12.3 + 1.3 mm and 7.3 + 0.6 mm against *C. albicans* in comparison to the positive control. We did not record zones of inhibition for *P. aeruginosa*, *S. aureus*, and *E. coli*.

Conclusions: We found out that extracts from *Micromonospora* and *Saccharopolyspora* have proven to possess compounds that inhibit the growth of *C. albicans*. Thus, this study confirmed that Invertebrates from Lake Baikal are a promising source of actinobacteria that produces a wide variety of bioactive compounds, including antifungals.

List of sources used:

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