**Introduction**

This study explores antimicrobial features of two soil lichens, *Cladonia rangiformis* Hoffm. and *Cladonia convoluta* (Lamk) Cout. In vitro antimicrobial activities of methanol and chloroform extracts against two gram negative bacteria (Pseudomonas aeruginosa and Escherichia coli), two gram positive bacteria (Staphylococcus aureus and *Bacillus subtilis*), and Candida albicans, were tested using the paper disc method, through determination of minimal inhibitory concentration (MIC) (Table 1). The cytotoxic effects of the lichen extracts on human breast cancer cell were also evaluated using trypsin blue method.

**Material and Methods**

Lichen Material and Test Microorganisms

Lichen material was sampled from Kandira district of Kocaeli province. The test microorganisms, *Pseudomonas aeruginosa* ATCC 15442, *Escherichia coli* ATCC 25922, *Enterococcus faecalis* ATCC 29212, *Staphylococcus aureus* ATCC 29213, and *Candida albicans* ATCC 90028, were provided by the Medical Microbiology Department of the Medicine Faculty of Yeditepe University.

**Preparation of lichen extracts**

The air-dried lichen samples were ground by means of mortar and pestle. Powdered materials of *C. rangiformis* (5 g) and *C. convoluta* (3 g), were successively extracted in the Soxhlet apparatus using by 270 ml of methanol and chloroform solvents. The extracts were filtered using Whatman No. 1 filter paper. The extracts were evaporated by a rotary evaporator to dryness under reduced pressure. The extracts were sterilized by membrane filtration using 0.45 μm pore sized Millipore filters and were kept at -20 °C until assay.

**Results**

The obtained results indicated that the chloroform extracts exhibited more significant antimicrobial activity than the methanol extracts. But, a higher antifungal activity was noted in the methanol extract of *Cladonia rangiformis*. The maximum antimicrobial activity was recorded for the chloroform extract of *Cladonia convoluta* against *Escherichia coli*. The chloroform extract of *C. convoluta* had a weak effect on *C. albicans*, however, its methanol extract did not exhibit any antifungal activity. The results of cytotoxicity showed that *C. rangiformis* extract was more effective than *C. convoluta* extract on MCF-7.

**Discussion**

The results of this study indicated that the lichen extracts showed promising antimicrobial activity against various microorganisms. The cytotoxicity of the extracts was also evaluated, which showed that the extracts had potential to be used as natural antimicrobial agents. Further studies are needed to investigate the potential of these lichen extracts as natural antimicrobial agents.

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