

ANTIMICROBIAL ACTIVITY OF LICHEN EXTRACTS IN DISK DIFFUSION TESTS: INTERFERENCE OF SOLVENTS USED IN EXTRACTS SOLUBILIZATION

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ANTIMICROBIAL ACTIVITY OF LICHEN EXTRACTS IN AGAR DISK-DIFFUSION TEST: INTERFERENCE OF SOLVENTS USED IN EXTRACTS SOLUBILIZATION

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ABSTRACT

In recent years, there has been a growing interest in researching and developing new antimicrobial agents from various sources to combat microbial resistance. The most used methodology for testing natural compounds for determination of antifungal are bio-autography, disk-diffusion, agar dilution, and dilution tests. The correct performance, interpretation and application of the diverse methodologies can be influenced by so many ways, specialty by solubilization of antibiotic molecule in different solvents, and their diffusion capacity. This study aimed to verify the influence of solvents used for solubilization of organic extracts of *Cladina dendroides* in agar disk-diffusion. Organic extracts of *C. dendroides* were obtained in ether, chloroform, acetone, solubilized in DMSO, and tested against *Mycobacterium phlei* strain. Paper disks of 6mm diameter were impregnated with 2mg/mL of the extract, our negative control was used only the solvents and as positive control commercial disks of amikacin, an Aminoglycoside with been know active antimicrobial agents against most of the standard nontuberculous mycobacteria. The disk-diffusion test was proceeded in independent duplicated experiments using Mueller-Hinton agar medium (X cm diameter) 10⁷CFU/mL of *M. phlei*. The plates were incubated at 36°C for 24h and evaluated by halos inhibition formation and size around the disk. It was observed that the ether, chloroform, and acetone extract solubilized in DMSO inhibited the growth of *M. phlei* with halos 14mm, 15mm and 12mm, respectively. However, the same extracts solubilized in the solvents extractors were inactive against *M. phlei*. This demonstrates that the solvent used in antimicrobial test disk diffusion to solubilize extracts should be selected carefully because it may lead to wrong results. In this study, the *C. dendroides* extracts produced different results, depending on the solvent used for their solubilization, with positive antibacterial action when solubilized in DMSO and negative when solubilized in other solvents tested.

Keywords: Lichen extracts, Agar diffusion test, *Cladina dendroides*

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