

ISOLATION AND EVALUATION OF THE SECONDARY METABOLITES AND BIOLOGICAL ACTIVITY OF ENDOPHYTIC FUNGI FROM HYSSOPUS OFFICINALIS***Eshboev Farkhod****Senior Research Fellow, PhD,**Institute of the Chemistry of Plant Substances****Valieva Mufazzal****Master, National University of Uzbekistan****Khayrullaeva Lobar****Assistant Lecturer, Qarshi State University*

In recent years, there has been a growing interest in the study of endophytic fungi from medicinal plants. Endophytes, which are microorganisms that live asymptotically within plant tissues, are recognized as a vast and underexplored resource of unique chemical compounds [1]. Throughout their life cycle, fungi produce secondary metabolites, but their maximum production is generally associated with the stationary growth phase under nutrient-limited conditions [2]. This is because secondary metabolites often play a role in adaptation to stressful conditions, such as competition for resources or defense against other organisms.

Accordingly, the aim of this study was to investigate the effect of extraction conditions on the antimicrobial activity of secondary metabolites.

Typically, ethyl acetate, methanol, dichloromethane, hexane, and ethanol are used to extract metabolites from fungal culture broth. The choice of solvent depends on the solubility of the target compounds [3]. In this case, two extraction methods were applied: cold extraction and ultrasonic-assisted extraction (sonication) [4].

The bioactivity of the secondary metabolite extracts was evaluated using antibacterial and antifungal disc diffusion assays. The antibacterial activity of secondary metabolites from 9 studied isolates was tested against Gram-positive and Gram-negative test bacteria using the disc diffusion method, with appropriate control antibiotics – ampicillin and ceftriaxone. Antifungal activity was evaluated using test fungi in comparison with fluconazole as the control antifungal agent. As a result of the study, among the 9 extracts obtained from different isolates, the 7th isolate demonstrated the most effective inhibition zones. The isolate with the highest activity can be considered for further research and potentially for the development of effective antibiotic agents.

References:

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