

Antibacterial activity of locally isolated thermophilic fungus, *Myceliophthora thermophila*

ABSTRACT

The current study is aim to assess the antibacterial activity of methanolic extract of thermophilic fungus *Myceliophthora thermophila*. This microorganism was isolated from soil in Peninsular Malaysia. The antibacterial test was carried out against gram positive microbes which were *Staphylococcus aureus*, *S. epidermidis* and gram-negative microbes *Escherichia coli* and *Enterobacter aerogenes* by utilizing disc diffusion method (diameter 6 mm) as a prescreening test. The methanolic extract of the fungus showed antibacterial activities with zones of inhibition estimation of 25.7 mm and 23 mm against *S. aureus*, and *S. epidermidis*, while 12.7 mm and 14 mm against *Ech. coli* and *Ent. aerogenes*, respectively. The antibacterial activities of *M. thermophila* methanolic extract was encouraging, since it hindered the growth of all test microorganisms. GCMS was used to determine the chemical substances as new natural product source. The components obtained were Furoic acid hydrazide (5.11%), 2,6-Dimethyl-1,3-dioxan-4-ol (3.22%) and Palmitic acid (1.02%). The compounds profiled by GC-MS showed the antibacterial activity. Furoic acid, hydrazide is an organic compound most widely found in food products as a preservative and a flavoring agent. Other uses of furoic acid include food sterilizing, nylon preparation and optic technologies. Previous studies suggested the bactericidal and bioinsecticidal effect of furoic acid. However, the chemical compound 2,6-Dimethyl-1,3-dioxan-4-ol is a byproduct used in cosmetics and as cleanser. Palmitic acid is the most common fatty acid (saturated) found in microorganisms. It is used for texturing foods and also in soap producing. This compound also reported as used in the treatment of schizophrenia, and mentioned as antimicrobial and antioxidant active compound. The results demonstrated that *M. thermophila* exhibited biotechnological potential for the control of pathogenic microbes tested in vitro and has the potential as new natural product source.

Keyword: Thermophilic fungi; Antibacterial activity; Bioactive compound