

**BIOCHEMICAL STUDIES ON THE MODE OF  
ACTION OF SOME ANTIMICROBIAL AGENTS**

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## ABSTRACT

The present study was carried out to search for some new antimicrobial and antifungal agents against broad-spectrum microorganisms and to show the probable mechanism through which the most potent derivative exerts its action on the test organism. From screening program, 2-amino-4,6-dimethyl pyridine derivative of 5-nitro-2-thiophene carboxaldehyde given the abbreviated names DMNP exerting a pronounced antifungal activity against *Candida albicans*. Results of this study clearly indicated that, the target for action of DMNP is the cell membrane which causes its damage by the inhibition of ergosterol (the major sterol of fungi) biosynthesis. Moreover, DMNP cause also disturbance in fatty acid metabolism which may accumulate in oil droplets. In addition, DMNP strongly curtailed the synthesis of *Candida albicans* soluble phosphorus, RNA, DNA besides a cytoplasmic pool target, protein synthesis.

*This Thesis Has Not Been  
Submitted To This or Any  
Other University*

*Sally Ahmed A. Khalil*

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## ABBREVIATIONS

A°	: Angstrom
ATP	: Adenosine Tri Phosphate
A. niger	: <i>Aspergillus niger</i>
b. p.	: boiling point
<i>B. subtilis</i>	: <i>Bacillus subtilis</i>
C	: Cytosine
<i>C. albicans</i>	: <i>Candida albicans</i>
Cpd	: Compound
DMSO	: Dimethyl sulphoxide
DMNP	: 2,4 dimethyl-5-N(2-methyl-5-nitrothiofyl)-pyridine
DNA	: Deoxyribonucleic acid
<i>E. coli</i>	: <i>Escherichia coli</i>
G	: Guanine
GC	: Gas Chromatography
GLC	: Gas Liquid Chromatography
HIV	: Human Immunodeficiency Virus
HPLC	: Highly Performance Liquid Chromatography
I. R.	: Infrared
M	: Molar
MIC	: Minimum inhibitory concentration
mM	: Millimolar
Mol. W.	: Molecular weight
mRNA	: Messenger ribonucleic acid
ng	: nanogram
nm	: nanometer
No	: Number
NTC	: 5-nitro-2-thiophene carboxaldehyde
O. D.	: Optical density