## **CONTENTS**

Object	Page
List of Tables	I
List of Figures	III
Chapter (1) Introduction and Historical Review	
Introduction	1
Historical review:	3
Environmental conditions for tilapia culture	3
Nutrient requirements of fish	4
Growth and growth promoters	6
-Antibiotics	6
-Hormones	11
Probiotics in aquaculture	14
Probiotic mode of action	15
Yeast as probiotics	24
Probiotics and the Immune system	26
Effects of yeast on immune system of fish	35
Probiotics and water quality	36
Aim of the work	39
Chapter (2) Materials and methods	
2.1 The experimental design and conditions	40
2.1.1 The first experimental study	40
2.1.2 The second experimental study	41
2.2 Microbiological aspects of some microbial flora isolated	41
from Oreochromis niloticus gut	
2.2.1 Isolation of some microbial isolates	41

2.2.2 Selection of some microbial isolates	42
2.2.3 Characterization of some microbial isolates	43
2.2.4 Biomass production	43
2.4 Experimental diet	44
2.5 water quality parameters of the rearing ponds	44
2.6 Determination of growth performance parameters	48
2.7 Determination of feed utilization	48
2.8 Proximate composition of carcass, flesh and fish feed	49
2.9 Determination of digestive enzymes activity	50
2.9.1 Amylase enzyme activity	51
2.9.2 Protease enzyme activity	51
2.9.3 Lipase enzyme assay	52
2.9.4 Determination of total protein content	53
2.10 Immunological parameters for the first experiment	53
2.10.1 Phagocytosis	54
2.10.2 lysozyme activity	54
2.10.3 Acid phosphatase	54
2.10.4 Immunoglobulin	55
2.11 Immunological parameters for the second experiment	55
2.11.1 lysozyme activity	55
2.11.2 Phenoloxidase activity	55
2-11 Statistical Analysis	56
Chapter (3) Results	
- THE FIRST EXPERIMENTAL STUDY (PART I)	57
- THE SECOND EXPERIMENTAL STUDY (PART II)	84
Chapter (4) Discussion	110
Chapter (5) Summary	130
-Chapter (6) Reference	136

1-5