

CONTENTS

Subject	Page
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	3
2.1- Nature of industrial lignocellulosic wastes	3
2.2- Application of lignocellulosic materials	6
2.3- Physical and chemical pretreatments	7
2.4- Production of cellulolytic and hemicellulolytic enzymes	11
2.5- Kinetics of the produced cellulase and hemicellulase enzymes	20
6- Enzymatic hydrolysis of extracted cellulose and isolated hemicellulose	25
3. MATERIALS AND METHODS	35
4. RESULTS AND DISCUSSION	49
4.1- Chemical composition and pretreatment of sugarcane bagasse	49
4.2- Production of cellulase and hemicellulase enzymes	51
4.3- Effect of different parameters on the activity and reaction velocity of the cellulase and hemicellulase enzymes	54

Subject	Page
4.3.1. Effect of temperature on the reaction activity of enzymes	54
4.3.2. Effect of pH on the reaction activity of enzymes	55
4.3.3. Effect of enzyme concentration on the reaction activity of enzymes	65
4.3.4. Effect of substrate concentration on the reaction velocity of enzymes	70
4.4- Stability of the produced cellulase and hemicellulase enzymes	82
4.5- Enzymatic saccharification of extracted cellulose and isolated hemicellulose from sugarcane bagasse	86
5. SUMMARY	92
6. REFERENCES	96
7. ARABIC SUMMARY	-

LIST OF TABLES

Table	Title	Page
(1)	Standard curve of D (+) glucose	38
(2)	Standard curve of D (+) xylose	39
(3)	Chemical composition of crude and pretreated sugarcane bagasse	50
(4)	Activities of the produced cellulase and hemicellulase enzymes from two fungi and different media	53
(5)	Effect of temperature on the reaction activity of cellulase enzyme with CMC and extracted cellulose from sugarcane bagasse	56
(6)	Effect of temperature on the reaction activity of hemicellulase enzyme with xylan and isolated hemicellulose from sugarcane bagasse	58
(7)	Effect of pH on the reaction activity of cellulase enzyme with CMC and extracted cellulose from sugarcane bagasse	61
(8)	Effect of pH on the reaction activity of hemicellulase enzyme with xylan and isolated hemicellulose from sugarcane bagasse	63
(9)	Effect of enzyme concentration on the reaction activity of the produced cellulase with CMC and extracted cellulose from sugarcane bagasse	66
(10)	Effect of enzyme concentration on the reaction activity of hemicellulase with xylan and isolated hemicellulose from sugarcane bagasse	68
(11)	Effect of substrate concentration on the reaction velocity of cellulase enzyme produced from <i>Aspergillus niger</i>	73

Table	Title	Page
(12)	Effect of substrate concentration on the reaction velocity of cellulase enzyme produced from <i>Trichoderma harzianum</i>	75
(13)	Effect of substrate concentration on the reaction velocity of hemicellulase enzyme produced from <i>Aspergillus niger</i>	78
(14)	Effect of substrate concentration on the reaction velocity of hemicellulase enzyme produced from <i>Trichoderma harzianum</i>	80
(15)	Stability of the produced cellulase enzyme	83
(16)	Stability of hemicellulase enzyme	84
(17)	Enzymatic saccharification of different concentration of extracted cellulose	88
(18)	Enzymatic saccharification of different concentration of isolated hemicellulose	90