



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ





شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %



شبكة المعلومات الجامعية



بعض الوثائق الأصلية تالفة



شبكة المعلومات الجامعية



بالرسالة صفحات
لم ترد بالأصل

**EFFECT OF OSMOTIC POTENTIAL
OF SUGARS ON THE BIOLOGICAL
ACTIVITY OF YEAST**

By

GEHAN FAROUK GALAL AHMED

B.Sc. Agric. Microbiology (1990)

A thesis submitted in partial fulfillment

of

**the requirements for the degree of
MASTER OF SCIENCE**

In

**Agriculture and Science
(Agricultural Microbiology)**

**Department of Agric. Microbiology
Faculty of Agriculture
Ain Shams University**

BNY VI
1997

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**B.Sc. Agric. Microbiology, 1990
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Approval Sheet

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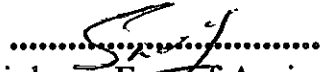
Prof. Dr. S.A. El-Sayed

Head of Research, Agriculture Research Centre



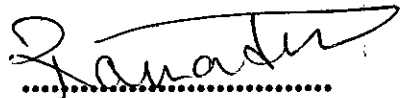
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Date of examination: 9/6 /1997

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ABSTRACT

Gehan Farouk Galal Ahmed, Effect of Osmotic Potential of Sugars on the Biological Activity of Yeast
Unpublished Master of Science, University of Ain Shams,
Faculty of Agriculture, Department of Microbiology,
1997.

Thirty nine osmophilic yeasts were isolated from different foodstuffs. These yeasts belonged to *Torulopsis*, *Saccharomyces*, *Candida* and *Rhodotorula* representing 64.1%, 25.6%, 7.7% and 2.6% respect. Three yeast species were selected to study their biological activities being *Sacch. kluyveri* G29, (highly fermentative) *Sacch. cerevisiae* S41 (moderately fermentative) and *Rhodotorula mucilaginosa* J38 (oxidative yeast). The increase of osmotic potential of sugars enhanced the fermentation products of *Saccharomyces* species such as glycerol and ethanol whereas a sharp decrease in biomass was observed. On the contrary, *Rhodotorula mucilaginosa* J38 biosynthesized more reserved materials (glycogen, Trehalose and soluble sugar) with the increase of sugar stress as compared with fermentative yeasts. These products play an important role in the osmoregulation of cells. These oxidative yeast also produced a higher biomass than fermentative yeasts. All tested yeast strains tolerated sodium chloride up to 10% except *Rhodotorula mucilaginosa* J38 which grew up to 15%. At 10% sodium chloride, the inhibitory effect of sugar concentration was observed at 40% glucose for *Sacch. cerevisiae* S41 and *Rhodotorula mucilaginosa* J38. Organic nitrogen sources decreased the inhibitory effect of osmotic pressure of sugars. The enzyme activity of alcohol dehydrogenase increased gradually with the increase of glucose concentration whereas invertase did not show any remarkable changes in its activity.

Oxygen consumption rate by yeast cells gradually suppressed by the increase of glucose concentration.

Key words: Osmotolerant yeast, growth parameters, *Saccharomyces kluyveri*, *Saccharomyces cerevisiae*, *Rhodotorula mucilaginosa*, glycerol, ethanol, glycogen, trehalose, soluble sugar.