



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 %



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# بعض الوثائق الأصلية تالفة



شبكة المعلومات الجامعية



بالرسالة صفحات  
لم ترد بالأصل

**ACTIVITY OF HYDROLASE AND OXIDOREDUCTASE  
ENZYMES IN SOME FOODS TREATED WITH  $\gamma$  RAYS**

By

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**A thesis submitted in partial fulfillment  
of  
the requirements for the degree  
of**

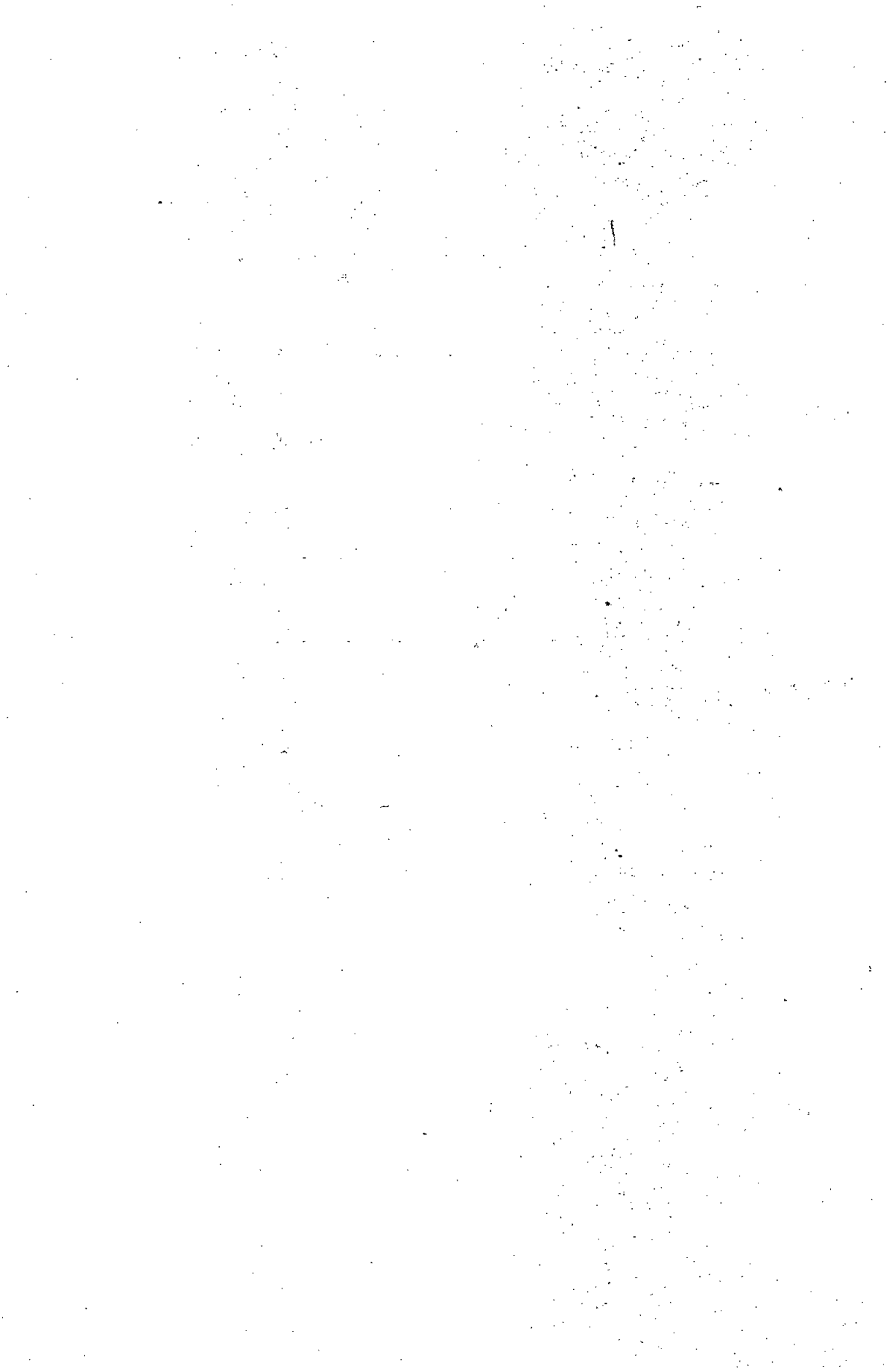
**DOCTOR OF PHILOSOPHY**

**in**

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(Food Science and Technology)**

**Department of Food Science  
Faculty of Agriculture  
Ain Shams University  
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2000**

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9721



## **Approval Sheet**

### **ACTIVITY OF HYDROLASE AND OXIDOREDUCTASE ENZYMES IN SOME FOODS TREATED WITH $\gamma$ RAYS**

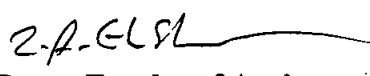
**By**

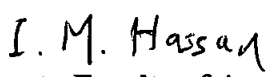
**MOHAMED BEN MAHMOUD MASSRI**

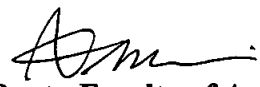
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Specific Education (1994-1997). (Supervisor).

**Date of examination: 29 / 6 / 2000**



1. The first part of the document is a letter from the President of the United States to the Congress, dated January 3, 1862. It is a very important document, as it contains the President's views on the state of the Union and the progress of the war.

2. The second part of the document is a report from the Secretary of the War Department, dated January 10, 1862. It contains a detailed account of the military operations of the Army during the year 1861, and a statement of the condition of the Army at the beginning and end of the year.

3. The third part of the document is a report from the Secretary of the Navy, dated January 10, 1862. It contains a detailed account of the operations of the Navy during the year 1861, and a statement of the condition of the Navy at the beginning and end of the year.

4. The fourth part of the document is a report from the Secretary of the Department of the Interior, dated January 10, 1862. It contains a detailed account of the operations of the Department during the year 1861, and a statement of the condition of the Department at the beginning and end of the year.

5. The fifth part of the document is a report from the Secretary of the Department of the Treasury, dated January 10, 1862. It contains a detailed account of the operations of the Department during the year 1861, and a statement of the condition of the Department at the beginning and end of the year.

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**Prof. Dr. Mohamed Amin Abd-Allah**

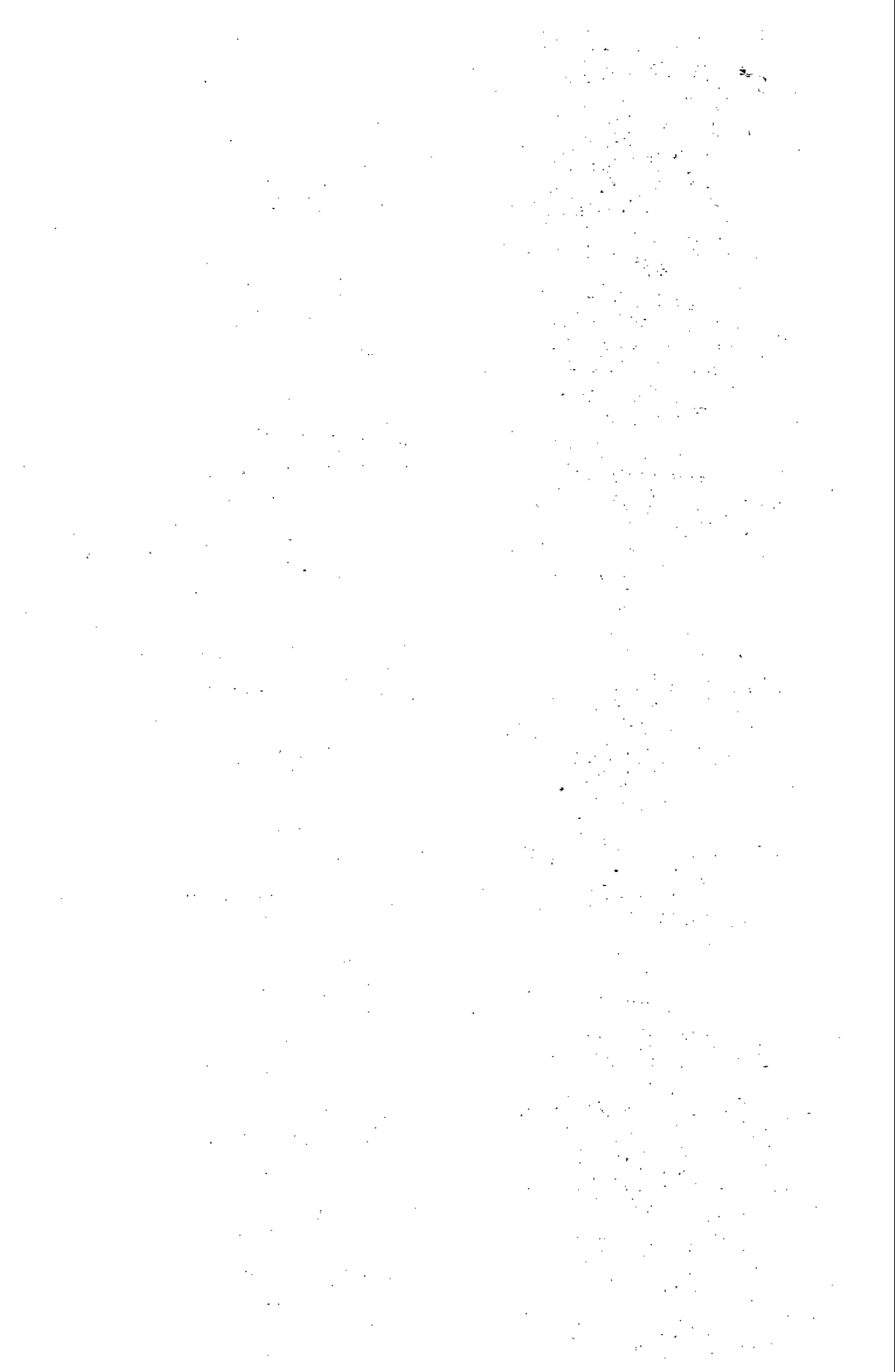
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## ABSTRACT

**Mohamed Ben Mahmoud Massri. Activity of hydrolase and oxidoreductase enzymes in some foods treated with  $\gamma$ -rays. Unpublished Doctor of philosophy Dissertation. Ain Shams University, Faculty of Agriculture, Food Science Department, 2000.**

It was aimed through the scope of the study to look forward about the effect of irradiation on the velocity of oxidoreductase and hydrolase enzymes in some food stuffs. The investigated enzymes namely polyphenolase and peroxidase representing the former group, while the pectin methyl esterase was chosen to represent the latter one. Food stuffs that being under test within the research at hand were: mango fruits, potato tubers, onion, garlic bulbs and pistachio nuts. These aforementioned samples were treated with specific irradiation doses and stored for different periods according to the following model:

- \*\* Mango fruits; were treated with 500, 1000, 1500, 2000, 2500 and 5000 Gy. Storage was performed for three weeks at  $20 \pm 2^\circ\text{C}$ .**
- \*\* Potato tubers, onion, and garlic samples; were irradiated with 160, 200, 250, 300, 1000 and 5000 Gy. Storage was achieved at  $20 \pm 2^\circ\text{C}$ .for the following corresponding periods 20 weeks, 6 and 8 months.**
- \*\* Pistachio nuts were treated with 250, 500 and 2000 Gy and stored for 6 months under similar storage condition.**

The velocity of the three enzymes; i.e. polyphenoloxidase, peroxidase and pectin methyl esterase were measured in each of the studied food stuffs within a different substrate and enzyme concentrations. Kinetic aspects of the same enzyme in terms of  $K_m$ ,  $V_{max}$ , slope of activity, angle of activity, pseudo value and catalytic affinity were considered for individual samples withdrawn during the aforementioned storage periods. Moreover, fatty and

amino acids identification as well as electrophoretic pattern were given for pistachio nuts and potato tubers.

A control samples was taken into consideration for each irradiation treatment and statistical in terms of " Duncan" multiple range tests as well as regression analyses (both the simple and multiple one) were used to estimate the best fit dose that highly reduce the activity of the responded enzymes.

**Key words:**  $\gamma$ -rays, Polyphenoloxidase (PPO), Peroxidsae (POD), Pectin methylesterdsae (PME),  $K_m$ ,  $V_{max}$ , Slope, Degree of affinity, Catalytic efficiency, Angel of activity, Mango fruits, Potato tubers, Onion bulbs, Garlic bulbs, Pistachio nuts, and Electrophoresis.

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To him I also owe more than can be expressed, especially he puts me in the way of those who working in the world of irradiation and enzymes.

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