شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

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

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائـــــــق الاصليـــــة تالفـــة

بالرسالة صفحات لم ترد بالاصل

Biochemical Studies on Some Egyptian Plants and Its Relation to Environment

By

Hossam El-Din Saad El-Beltagi

B.Sc. Biochemistry, Faculty of Agriculture, Cairo University 1997

THESIS

Submitted in Partial Fulfillment of The Requirements for The Degree of Master of Science

In

Biochemistry

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Cairo University

2001

To My Family

With

My Deepest Gratitude

For

Their Support, Encouragement
And Patience

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ABSTRACT

This investigation are carried out to study effect of different doses of gamma radiation 0.5, 1.0, 2.0, 3.0, 5.0 and 7.5 KGy on chemical composition, protein, enzyme profile and lipid fractions of three cultivars of oil seeds soybean, peanut and sesame. The effect of gamma radiation doses on total protein solubility, albumin fraction, globulin fraction and SDS-ME fraction were investigated using SDS-PAGE of Laemmli (1970). The protein profiles and enzyme activities of; acid phosphatase, catalase, esterase, lipoxygenase, peroxidase and polyphenol oxidase were studied. Fatty acid and unsaponifiable profiles of oil seeds were qualitatively and quantitatively determined by gas- chromatography. The results showed that no significant changes in the chemical composition (ash, moisture, protein, carbohydrate, lipid and minerals content) in the three oil seeds in different treatments. The results of the electrophoretic separation of protein proved that protein profile of different protein fractions were affected by irradiation dose depending and on the cultivar. The solubility of total protein were decreased and reached to the maximum decrease using irradiation dose of 7.5 KGy compared to the control. The interesting phenomena are that albumin and globulin fractions decreased in its solubility while the SDS-ME increased. On the other hand the results of enzymes proved that, the activity of peroxidase and acid phosphatase were increased and reached to its maximum at 7.5 KGy while lipoxygenase and polyphenol oxidase activity were decreased with the increasing of γ- irradiation doses in the three cultivars. The results of lipid contents proved that the ratios of total saturated fatty acids to unsaturated ones and total hydrocarbons to sterols were significantly altered upon irradiation. These changes were noticed in the lipid extracted from irradiated sesame seeds in comparison with the oils of irradiated peanuts and soybean. The major change in fatty acid composition was the decrease in the unsaturated fatty acids and the increase in the saturated fatty acids in all cases. In contrast, the cholesterol, campesterol, stigmasterol and β-sitosterol levels of irradiated seeds were generally lowered than that of the un-irradiated seeds.

Key Words: Gamma irradiation, Chemical composition, Protein profile, Enzyme activities, Fatty acids, Hydrocarbons and Sterols.

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CONTENTS

ABBREVIATIONS

KGy	Kilo Gray.
K Da	Kilo Dalton.
Σ	Linear millimolar absorption coefficient, 1 x m mol^{-1} x mm^{-1}.
P*I*	Isoelectric point.
MW	Molecular weight.
SDS	Sodium dodecyl sulphate.
PAA	Polyacrylamide.
PAGE	Polyacrylamide gel electrophoresis.
Bis	N, N- Methylene bisacrylamide.
NaN_3	Sodium azide.
Tris	Tris-(hydroxy methyl) amino methane.
TEMED	N, N, N, N,-tetramethyl ethylenediamine.
2- ME	2- Mercapto Ethanol.
TU / TS	Ratio between Total unsaturated fatty acids and Total saturated ones.
TH / TS	Ratio between Total hydrocarbons and total sterols.

1- Introduction