

Acknowledgement

I would like to express my deep appreciation and gratitude to my supervisor Dr. Mohamed Elmukhtar Abdel Aziz for his careful supervision , continuous encouragement and valuable advise in preparing this thesis.

I truly thank Dr Yassin El Dosigi Eltayeb, the director general of Sudanese Standard and Metrology Orgnization (SSMO) and Dr. Abdel Gadir Mohamed Aabdel Gadir, the former director general of SSMO for their support and encouragement.

My great thanks are extended to the staff members of SSMO at every level for their support. Special thanks are also due to Dr. Raja Omer, Mrs. Azza Osman, Miss Randa Gafar from mycotoxin laboratory and Miss Hoda Awad, Mr. Galal Izeldeen, Mrs. Sohair Mohamed, From chemistry laboratory, and Mrs. Alwia Ali, Miss Hazar Sowar El Dahab, and Miss Hala Mergheni from computer section.

My great thanks to members of staff of SSMO branch at Elobied for their valuable support.

I Sincerely thank my friend Prof. Abdel Rhman El Khidir from Elobied Agricultural Research Station for his assistance and support.

I am grateful to Mr. Etahir Mohamed Eltahir and his colleagues, Faculty of Pharmacy, U. of K. for their help in typing this manuscript.

I do appreciate all efforts of the people who kindly help me in a way or another during the period of this research.

Finally my heart feels gratitude to my family, the source of encouragement and support during this study

والحمد من قبل و من بعد لله رب العالمين الذي
بنعمته تتم الصالحات

Abstract

The groundnut is an important food and cash crop in Sudan.

In the view of aflatoxin effects on human health and economy as it is proved to be carcinogenic, strict quality regulations have been imposed by groundnut imported countries. Consequently, the groundnut export has fallen sharply in Sudan in the last years resulting in hard currency decrease in national income revenues.

The main objective of this study is to determine the levels of aflatoxin in groundnut at different stages of crop handling and processing from production to export to find out the critical point of contamination and to propose the necessary recommendations to reduce the aflatoxin contamination.

In this research 149 of groundnut samples were collected from western Sudan at different stages of crop handling and processing and analysed for aflatoxin contamination and some physical properties were also determined.

The results showed that the most critical crop contamination levels are, auction market, humid and oil mills stores.

In order to reduce aflatoxin contamination of groundnut in Sudan, careful pre and post harvest handling practices and improved storage conditions should be taken. Another important measure is the regular quality control in auction markets and before processing of groundnut.

يعد الفول السوداني من أهم المحاصيل الغذائية والذقية في السودان، غير أن مشكلة التلوث بالأفلاتوكسين ساهمت في تدني صادراته وانخفاض عائداته في السنوات الأخيرة وذلك بسبب القيود الصارمة التي تشترط الدول المستوردة استيفاءها قبل السماح بدخول هذه السلعة إلى حدودها بسبب علاقة الأفلاتوكسين بسرطان الكبد وإنعكاسات ذلك على صحة الإنسان والاقتصاد.

إن الهدف الأساسي من هذه الدراسة هو رصد التلوثات بالأفلاتوكسين في كل مراحل ومستويات إنتاج وتداول الفول السوداني من مرحلة الإنتاج إلى التصدير لتحديد أكثر المستويات تلوثاً واقتراح التوصيات التي تؤدي إلى تحسين جودة المنتج وزيادة قدرته التنافسية في الأسواق العالمية. هذا بالإضافة لتوفير المعلومات في هذا المجال لمساعدة الباحثين في توجيه البحث مستقبلاً نحو المراحل الحرجة من التلوث.

لقد استهدف البحث منطقة غرب السودان باعتبارها المنطقة الرئيسية لإنتاج الفول السوداني ولتفاقم مشكلة التلوثات بالأفلاتوكسين فيها، واشتمل على فحص وتحليل 149 عينة فول سوداني غطت مراحل الإنتاج وأسواق المزادات والتخزين والتصدير وظهر من نتائج الدراسة أن أسواق المزادات والمخازن الرطبة ومخازن معاصر الزيوت تمثل المستويات الحرجة للتلوث.

وتأسيساً على نتائج هذه الدراسة فإن خفض التلوث والتقليل من حجم المشكلة يتطلب اتباع الأساليب العلمية والتحوطات الضرورية قبل وبعد حصاد المحصول وأثناء التداول وتطبيق نظام ضبط الجودة في أسواق المزادات لتتم عمليات الشراء على أساس الجودة علاوة على تبصير

المنتجين والمصدرين بالمخاطر التي يشكلها التلوث بالأفلاتوكسين على
الصحة والاقتصاد.

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List of abbreviations

AFB, AFM, etc	= Aflatoxin B, Afltoxin M etc.
A. flavous,	= <i>Asperigillus flavus</i> ,
A. parasiticus	<i>Asperigillus parasiticus</i>
LD50 values	= Lethal dose for 50% of the group
EPHX	= DNA sequence coding for microsomal epoxide hydrolase (MEH)
GST	= Glutathionine-S-transferase enzymes
GSTM1	= DNA sequence coding for Glutathionine-T-transferase1 (GST- Theta)
DNA	= Deoxyribo nucleic acid, molecular carrier of genetic information
HBV	= Hepatitis B virus
HCC	= Hepatocellular carcinoma, primary liver cancer
TLC	= Thin layer chromatography
HPTLC	= High performance thin layer chromatography
HPLC	= High performance liquid chromatography
ELISA	= Enzyme linked immuno-sorbent assay
Vr	= Virbational relaxation
ec	= External conversion
isc	= Intersystem crossing
SD	= Standard deviation