سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

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شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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

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سامية محمد مصطفى

شبكة المعلومات الجامعية

بعض الوثائق الأصلية تالفة

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بالرسالة صفحات لم ترد بالأصل

Analytical studies on the determinationof some organic pollutants and possibility of their removal from pollutedfood

Presented by

El-Shaimaa Ali Abdel Hafez Ali, M.Sc. (2016)

A Thesis Submitted

To
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Chemistry Department
Faculty of Science
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Ain Shams University
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Abstract

Thesis Title: Analytical studies on the determination of some organic pollutants and possibility of their removal from polluted food

Name of candidate: El-Shaimaa Ali Abdel Hafez Ali

Degree: Ph.D. in chemistry (analytical chemistry)

The aim of present study was to suggest method of extraction and analysis of the studied organic pollutants (polycyclic aromatic hydrocarbons (PAHs)) with assessment of their contamination levels in some Egyptian food products and to investigate the possibility of their elimination or suppression using natural food additives. In the first part of this study, a full factorial 2^3 was employed in order to optimize the extraction conditions of the studied PAHs. Two comparative extraction methods were chosen for PAHs extraction including ultra-sonication assisted extraction and quechers extraction. Application of optimized extraction method on commercial food samples using gas chromatography-tandem mass spectrometer (GC/MS MS) for quantification. The second part was also assessed the human health hazards effects of studied PAHs at different age categories. The third and fourth parts of this study included treatment of the investigated PAHs polluted food using natural food additives. Different factors were optimized to get acceptable removal efficiency. Characterization and bioactive screening of the extracted natural food additives were also carried out. The obtained data revealed that PAHs levels in the analyzed food samples were reached to 8.3 µg/g for dairy based products and 387 ng/g for potato chips. The removal efficiency of PAHs using natural food additives enhanced to be 96% for potato chips and 80% for milk samples.

Keywords: polycyclic aromatic hydrocarbons, factorial design, quechers, removal efficiency

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El shaimaa Ali Abdel Hafez Ali

Published from Thesis

1-Title ofarticle:

Distribution and Health hazards of Polycyclic Aromatic Hydrocarbons in Egyptian milk and dairy-based products.

Authors : Gehad, G. Mohamed, Eglal, R.Souaya, Lilly, H.Khalil El-Shaimaa, A.Rawash, Ghadir, A.El-Chaghaby and Mohamed, H.El-Gammal.

Journal : Beverages **2018**, 4, 63
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2-Title of article:

Optimization and Validation of an Extraction Method for the Analysis of Polycyclic Aromatic Hydrocarbons in Potato chips using gas chromatography -mass spectrometry

Authors : Gehad, G. Mohamed, Eglal, R.Souaya, El-Shaimaa, A.Rawash, Ghadir, A.El-Chaghaby

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PCBs	Poly chlorinated biphenyls
PAHs	Polycyclic aromatic hydrocarbons
Naph	Naphthalene
ACY	Acenaphthylene
Flu	Fluorene
PHE	Phenanthrene
ANT	Anthracene
PYR	Pyrene
BaA	Benzo[a]anthracene
CHR	Chrysene
BbF	Benzo[b]fluoranthene
BkF	Benzo[k]fluoranthene
BaP	Benzo[a]pyrene
IPY	Indeno [1,2,3cd]pyrene
BPE	Benzo[ghi]perylene
EPA	Environmental Protection Agency
IACR	International Agency for Research on Cancer
EU	European Union
EFSA	European Food Safety Authority
LOQ	Limit of Quantitation
LOD	Limit of Detection
%R	Recovery Percentage
SD	Standard deviation
RSD	Relative standard deviation(
S/N	Signal to noise ratio
Σ [PAHs]	The total concentration of thirteen PAHs
LLE	Liquid–liquid extraction
SPE	Solid-phase extraction
DMSO	Dimethyl sulfoxide
hex	Hexane
Ace	Acetone
DCM	Dichloromethane
PS-DVB	Polystyrene/divinylbenzene
ppm	Part per million
ppb	Part per billion
UHPLC	Ultra high performance liquid chromatography
HPLC	high performance liquid chromatography

GC/MS	Gas chromatography mass spectrometry
EI	Electron ionization
SIM	Selected ion monitoring
MRM	Multi reaction monitoring
CE	Collision energy
eV	Electron volt
EM	Electron multiplier
TBHQ	Tert- Butyrated hydroxyl quinone
BHA	Butyrated hydroxy anisole
Rt	Retention time
I.D.	Internal diameter
UHT	Ultra heated treatment
EDI	Estimated Daily Intake
AVT	Apple vinegar treatment
GVT	Grape vinegar treatment
DVT	Date vinegar treatment
AT	Acetic acid treatment
CT	Citric acid treatment
MT	Malic acid treatment
TAA	Total antioxidant activity
TAC	Total antioxidant capacity
DPPH	2,2-diphenyl-1-picrylhydrazyl radical
IC_{50}	Concentration of sample required to scavenge 50% of the DPPH free radical
RE%	Removal efficiency percentage