



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

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قسم

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Title

Recent assessment approaches for detection of genotoxicity of some food additives in rats

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Abstract

The present study assessed the long-term daily administration of Titanium dioxide "TiO₂, E171" & Acrylamide (ACR). Titanium dioxide and acrylamide are widely used as a food additives that exists in various everyday food products all over the world together with vast applications in cosmetics and industry. However, several toxicological issues, particularly after oral exposure. This study was planned to investigate the effect of oral exposure through oral gavage once daily for 90 consecutive days to two doses of TiO₂ and ACR which are (20 or 40 mg/kg bwt) AND (1 or 2 mg/kg b.wt.) respectively on the blood components, immunity, cytotoxic, and genotoxic indicators. The results revealed that a dose-dependent leukopenia, eosinophilia, neutrophilia, and thrombocytopenia were noted. Also, the immunoglobins G (IgG) and IgM were significantly elevated the lysozyme levels, nitric oxide concentration, and phagocytic activity, immunoglobulin levels were significantly depleted. A significant reduced in lymphocyte proliferation but elevated LDH activity was prominent finally a marked increase in CD4 and CD8 immunolabeling was evident. Overall, these results indicated that TiO₂ and ACR exert hepatotoxic and immunotoxic effects with long-term exposure. these results indicated that the two-food additives could induce hematotoxicity, genotoxic, and immunotoxic alterations with exposure for long durations.

Keywords: Titanium dioxide; Acrylamide ;immune function; spleen; bone marrow; Comet;

Dedication

I wish to introduce my deep gratitude and

Utmost thanks to:

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List of Abbreviations

Item	Name
ACR	Acrylamide
CD4- cell	<u>T helper cells</u>
CD8- cell	Cytotoxic T cell
C	Congestion
DAB	Diaminobenzidine
DMEM	Dulbecco's Modified Eagle's medium
E	Edema
ELISA	Enzyme-Linked Immuno-Sorbent Assays
IgG	Immunoglobins G
IgM	Immunoglobins M
GC-MS	<u>Gas chromatography–Mass Spectrometry</u>
HBSS	Hank's balanced salt solution
Hb	Hemoglobin
HM	Hematopoietic marrow elements
HR	Hyperplasia
HO	Hypoplasia
H	Hemorrhage
IARC	The International Agency for Research on Cancer

KOH	Potassium hydroxide
LDH	<i>Lactate dehydrogenase</i>
MCHC	Mean corpuscular hemoglobin concentration
MCV	Mean cell volume
MCHC	Mean corpuscular hemoglobin concentration
MOE	Margin of exposure (MOE)
M	Megakaryocytes
NBT	Colorimetric nitroblue tetrazolium assay
NO	Nitric oxide
NK	Natural killer cells
PBS	Phosphate buffered saline
PCV	Packed cell volume
PALS	Peri-arterial lymphoid sheath:
RBCs	Red blood cells in total
T	Bone trabecular
TiO₂	Titanium dioxide