

العسل الطبيعي مضاداً للطفرة المحدثه بعقار الميثوتركسيت
Methotrexate في الفئران البيض *Mus musculus*

Natural Honey

Mus Musculus

(MTX)

(MTX)

/ (600 450 300 150)

/ (3.25)

(MTX)

Abstract

This study is designed to investigate the inhibitory efficiency of natural honey to the toxic and mutagenic effects of methotrexate drug in mice [*Mus musculus*] through using short-term assays which included cytogenetic analyses such as mitotic index of bone marrow and germ cells, chromosomal aberrations, micronucleus test and sperm head abnormalities assays.

The potential genotoxic and mutagenic activity of honey at doses 150, 300, 450 and 600 mg/kg B.wt were investigated by using the above parameters. Simultaneously antimutagenic effect of honey against MTX (at dose 3.25 mg/Kg B.wt) effects [before and after exposure] was tested.

The results revealed the following:-

Absence of toxicity and mutagenicity for all concentrations of honey at tested doses, the high inhibitory effects of methotrexate drug to cell division, induction of chromosomal aberration, micronucleus formation and sperm head abnormalities and the inhibitory efficiency of all concentration of honey against the toxicity and mutagenicity of methotrexate .

Anticarcinogens

(2006

2002

Harris, 1976)

Methotrexate (MTX)

Dihydrofolate

(Huennekens, 1994)

Inosinic

Thymidylic acid

.(Carter and Livingston , 1982)

(MTX)

(DNA-Repair) DNA
DNA

(Jenson and Nyfors , 1979)

(1990) Borchers

DNA

DNA

(DNA-Polymerase) DNA

Borchers

(Excision Repair)

Hypoxanthine Thymidine

DNA

in vivo

(1998)

Maskaleris

in Vitro

.Caffein

.SCE

(2002)

; 2001

; Kada *et al* , 1978)

Honey

(2006

))

69

((

(White , 1979)

(1994)

Flavonoides

(1983)

(2002)

(4.0 1.0 0.1)

(2006)

/ 2

- -

Methotrexate

(2002)

/ (600 450 030 150)

/ (3.25)

MTX

(12-8) *Mus Musculus*

(1977) Allen

(32-27)

(1964)

Evans

(100)

(1978)

Au

(1975) Bruce Wyrobeck

(100)

(1975) Schmid

(1000)

(1000)

(1986) Al-Allak Shubber

(1977)

Rawat

-:

$$100 \times \frac{\text{ج-أ}}{\text{ب-أ}} = \%$$

()

()

()

(7)

(5)

:

(7)

/ (600 450 300 150)

4

(4)

(3) ()

(7)

(9)

(6) ()

(7)

(4)

(3.25) MTX

(7) (4) /

(7) (6) ()

(3) (4) (MTX)

L.S.D.

(1) -1

(1) -

(1) (P<0.05)

%(19.06 19.80 20.57 18.58) / (600 450 300 150) .%(15.45)

(1) (P<0.05)

%(9.5) / (600 450 300 150) %(12.82 13.60 13.65 14.2)

/ (300) / (150)

(1) -

(1) -

(1) (2.99)

1.82 1.78 2.6) (3.06) / (600 450 300 150) (P<0.05)

/ (450 300)

(1)

(P>0.05)

(600 450 300 150) / (150)

%(2.98)

%(2.90 2.85 2.78 2.99) /

() MTX -2

(P<0.05) (2)

(MTX)

() MTX %(15.77)

(7) .%(6.65)

(P<0.05) MTX

40) () MTX (1)

/ (600 450 300 150) %(71 42 29

/ (600)

(P<0.05) MTX (2)

%(9.98)

(7) %(4.35) MTX

(P<0.05) MTX

/ (600 450 300 150) %(50 47 41 41)

/ (600 450)

(P<0.05) (2)

) () MTX

%(0.23) .(

(7) MTX .(10.02)

() MTX (P<0.05)

%(61 62 69 56) (1)

/ (300) / (600 450 300 150)

-

(2)

MTX
%(21.50) MTX
(7)
MTX
%(3.20)
(P<0.05)
(2)

MTX
(P<0.05)
%(61 63 63 57)
(450 300) / (600 450 300 150)
(1)

-

MTX (2)

%(7.52) %(2.87) ()
(2) .() MTX
MTX (7)
(P<0.05)
(1)

/ (600 450 300 150) %(93 97 98 95)
/ (450 300)
() MTX

-3

-

(P<0.05) (3)
MTX
()
/ (600 450 300 150) %(45 40 33 38)
/ (600 450)

(3)

(P<0.05) () MTX
%(4.35) %(9.98)
MTX

(P<0.05)

%(68 75 57 41) (1)

(600 450) / (600 450 300 150)

MTX (3)

(P<0.05)

() MTX

MTX (0.30) ()

/ (600 450 300 150) (10.21)

%(5.90 5.95 6.32 7.00) MTX

%(43 42 39 32) (1)

/ (600 450) %(600 450 300 150)

(3)

(P>0.05) MTX

(P<0.05) / (150)

%(20.80) MTX %(3.25)

16.82 19.50) / (600 450 300 150)

57 22 07) %(10.72 16.75

/ (600 450) %(57

(3) MTX

(P<0.05)

MTX MTX

) (P<0.05)

13 15) (1) .(

450) / (600 450 300 150) %(41 40

/ (600

(1)

(2006) (2002) (2002)

)

(1

(mitogens)

(White 1993)

(2002)

(2002)

(2008)

Glutathione Reductase

(Meister 1988)

Glutathione Peroxidase

Glutathione-S-transferase

.(Struznk *et al* , 2005)

MTX

(3:2)

(Maskaleis *et al* , 1998) (2002)

MTX

(1994) Huennkens

(Dihydrofolate reductase)

(Nucleotides)

DNA

(2005)

Johnston

DNA

(Borchers *et al* , 1990)

(Kasahara *et al* , 1992)

.(3) (2) MTX

MTX

(1)

MTX

(1983) Glutathione

(2008) Glutathione Reductase

(Hayatsu *et al* , 1988)

DNA Nucleophils
(Deflora and Ramel , 1988) Electrophils

(White , 1979)

(C) (C)
(Deflora and Ramel , 1988)

(C) (1982) Alokperov
DNA

(Mita *et al* ,1982)

Flavonoides

(Miski *et al* , 1983) DNA

(1)

(2)

GST

(1)

MTX

(Alekperov , 1984 ; Alekperov , 1982)

Desmutagen

(2006)

(2002)

Bioantimutagen

MTX (Metabolic activation)

DNA

.DNA

-1

MTX -2

MTX -3

-4

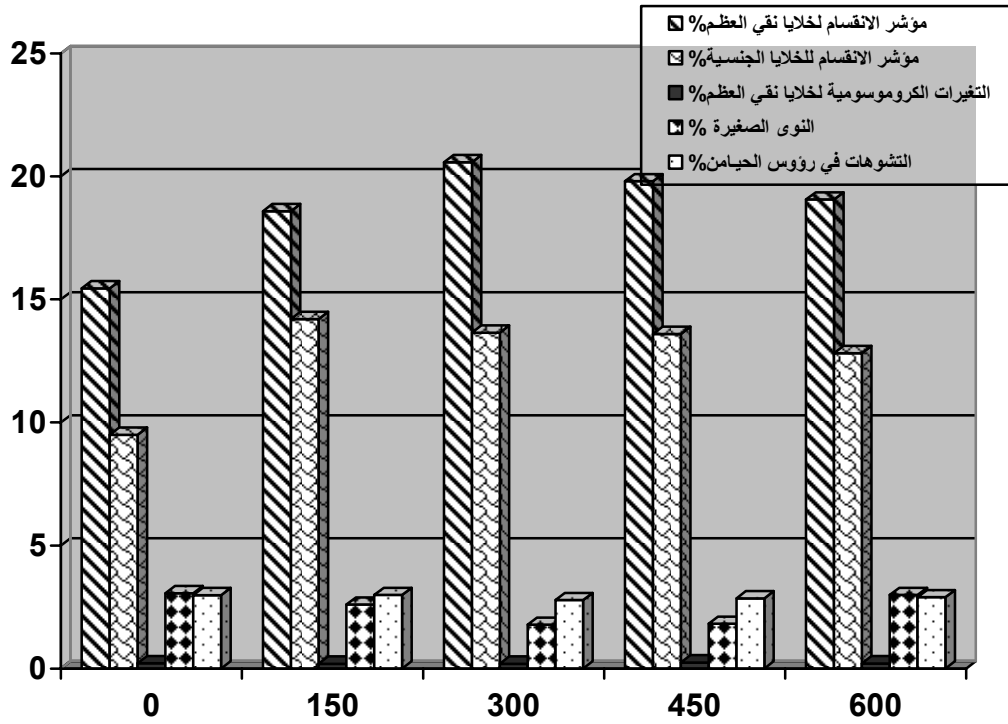
- (1983)
- (2002)
- (2001)
- .803-795 :(3) (6) *Mus Musculus*
- (2006)
- .510-500 :(3) (13)
- (2008)
- Mus Musculus* Glutathione Reductase
- .1391-1385 :(4) (15)
- (2002)
- (1994)
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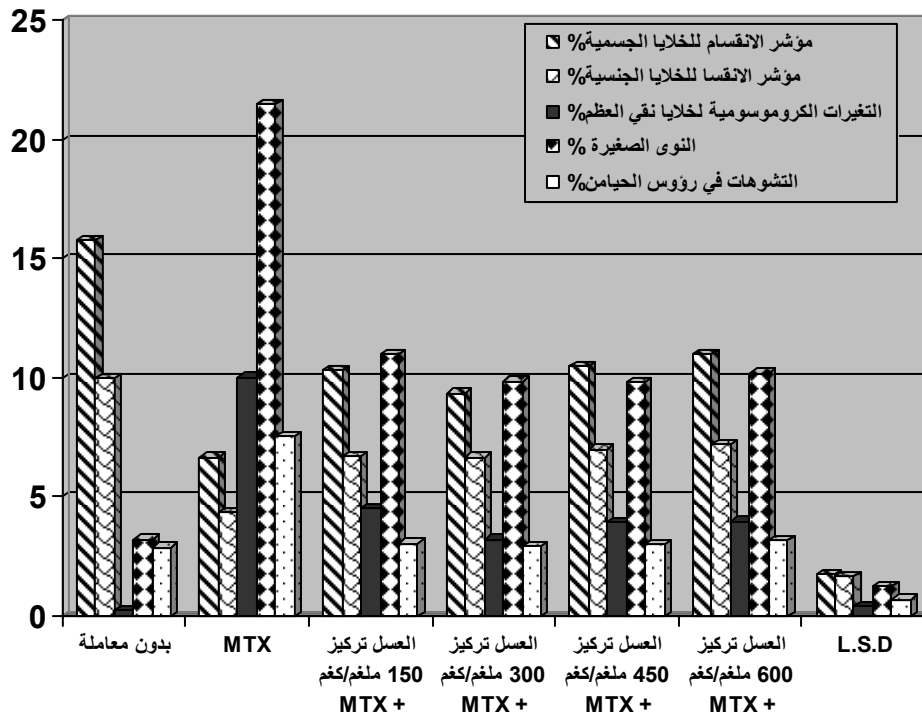
MTX

(1)

%					/
95	57	56	41	40	150
98	63	69	41	29	30
97	63	62	47.0	42	450
93	61	61	50.0	71	600
15	07	32	41	38	150
13	22	34	57	33	300
40	57	42	75	40	450
41	57	43	68	45	600

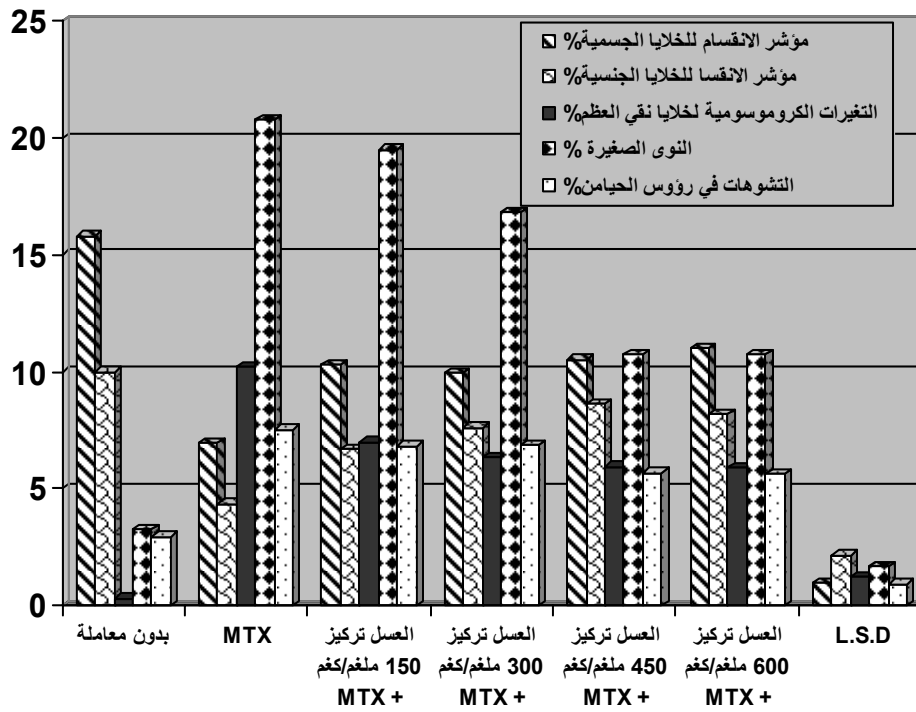


(1)



MTX

(2)



MTX

(3)