

## The effect of coffee consumption on liver function in adult male rabbits

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### Abstract:

This study was carried out on 10 adult male Rabbits to investigate the effect of Coffee at a dose ( 100 mg/ Kg B.W. / day) orally on the liver function by measuring the Liver enzymes such as [Glutamic Oxaloacetate transaminase (GOT) , Glutamic Pyruvic Transminase (GPT) , Total serum Billirubin (TSB) and Alkaline phosphatase (ALP)]. This study was lasted for one month and blood samples was taken at the end of the 2<sup>nd</sup> week and 4<sup>th</sup> week for determination the biochemical parameters.(GOT/GPT/ALP/TSB)

The results showed that a significant increasing ( $P < 0.05$ ) in the level of GPT, GOT and ALP enzymes in 2<sup>nd</sup> & 4<sup>th</sup> weeks in treated group as compared with the Control group with no significant increasing ( $P < 0.05$ ) in the TSB level in treated group as compared with the Control group.

That indicate the stimulatory effect of Coffee on liver functions.

**Key word:** Coffee, Caffeine, GPT, GOT , TSB ,. ALP.

### تأثير القهوة على نشاط الكبد في ذكور الأرانب البالغة

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### الخلاصة:

أجريت هذه الدراسة على 10 من ذكور الأرانب البالغة لملاحظة تأثير اعطاء القهوة بجرعة 100 ملغم / كغم من وزن الجسم / يومياً فموياً على وظيفة الكبد عن طريق قياس مستويات خمائر الكبد مثل خميرة الـ (Glutamic Oxaloacetate transaminase (GOT) ، وخميرة Total serum (Glutamic Pyruvic Transminase (GPT) ، ومستوى البليروبين الكلي (TSB) Billirubin ، وخميرة Alkaline phosphatase (ALP) استمرت هذه التجربة لمدة شهر واحد، وجمعت عينات الدم في نهاية الاسبوع الثاني والرابع لقياس المعايير الكيموحيوية. (GOT/GPT/ALP/TSB)

أظهرت النتائج زيادة معنوية ( $P < 0.05$ ) في مستوى خمائر GPT ، و GOT ، و Alkaline phosphatase في مجموعة المعاملة مقارنة مع مجاميع السيطرة مع وجود زيادة غير معنوية ( $P < 0.05$ ) في مستوى TSB مقارنة مع مجموعة السيطرة وهذا يدل على التأثير المحفز للقهوة على وظائف الكبد.

**Introduction:**

Coffee and Tea have been the most popular beverages in Western society for several hundred years. The Caffeine which is the highest compound found in the Coffee which has a potential consequences in the health of drinking Coffee people (1).

Coffee has many significant effect on human metabolism such as reduction in blood Glucose level (2), also it was reported that caffeine increased net hepatic Lactate and net hepatic glucose uptake during glucose load (3, 4, 5). The coffee consumption reduced the risk of liver cirrhosis (6) and preventing gall bladder stone (7). The regular drinking of coffee may stimulate the liver function (8).

The aim of this study is to investigate the effect of coffee consumption on liver function in adult male Rabbits.

**Materials and Methods:**

In this study we used 10 adult male Rabbits their weighted ranged from (1000- 1500) grams which kept for two weeks for adaptation period as ad libitum and fed pellets, then it was divided into two equal groups each group contain 5 animals:-

- 1- Control group: fed ordinary diet and water.
- 2- Treated group : given coffee at a dose 100mg/kg B.W with drink water and the study was lasted for 4 weeks.

The blood samples(5ml) was collected from heart and kept in

tubes and isolated the serum for biochemical tests which are:

Determination of GPT, GOT , Alkaline phosphatase and TSB by specialized Kits from Linner Company.

The statistical analysis by using statistical analysis system :STEEL 1980 (9).

**Results:****Effect of Coffee consumption at a dose (100 mg/kg B.W) on GOT level (IU/ L) in adult male Rabbits.**

The results showed a significant increasing ( $P < 0.05$ ) in GOT level in treated groups experimental period as compared with the Control group, also there is a significant increasing ( $P < 0.05$ ) in GOT level within treated group in the 4<sup>th</sup> week (table1).

**Effect of Coffee consumption at a dose (100 mg/kg B.W) on GPT level (IU/ L) in adult male Rabbits.**

There is a significant increasing ( $P < 0.05$ ) in GPT level in treated groups in the 4<sup>th</sup> week as compared with the Control group at the same time there is a non significant increasing ( $P < 0.05$ ) within treated group in the 4<sup>th</sup> week (table2).

**: Effect of Coffee consumption at a dose ( 100 mg/kg B.W) on TSB level (IU/ L) in adult male Rabbits.**

There is a non significant increasing ( $P < 0.05$ ) in TSB level in treated groups as compared with the Control group along experimental periods (table3).

**: Effect of Coffee consumption at a dose (100 mg/kg B.W) on Alkaline**

**phosphatase level (IU/ L) in adult male Rabbits.**

There is a significant increasing ( $P < 0.05$ ) in AK level in treated groups along experimental periods and also there is a significant increasing ( $P <$

0.05) within treated group in which (4<sup>th</sup> week) as compared with the Control group (table4).

**Table 1: Effect of Coffee consumption at a dose (100 mg/kg B.W) on GOT level**

**Table 1: Effect of Coffee consumption at a dose (100 mg/kg B.W) on GOT level (IU/ L) in adult male Rabbits.**

W	Control group	Treated group
2	8.1±0.5 Ba	14.1 ± .1 Ba
4	6.8 ± 0.3 A	14.8 ± 2.1 Bb

The values denote Mean ± SE (N = 5).

Small latter denote difference within group.

Capital latter denote difference between groups.

**Table 2: Effect of Coffee consumption at a dose (100 mg/kg B.W) on GPT level (IU/ L) in adult male Rabbits.**

W	Control group	Treated group
2	3.8 ± 0.3 A	5.1 ± 0.7 Aa
4	5.1±0.3	12.1.± 1.8 Bb

The values denote Mean ± SE (N = 5).

Small latter denote difference within group.

Capital latter denote difference between groups.

**Table 3: Effect of Coffee consumption at a dose ( 100 mg/kg B.W) on TSB level (IU/ L) in adult male Rabbits.**

W	Control group	Treated group
2	11.5± 0.7 Aa	14.2±0.7 Aa
4	11.2. ±0.6 Aa	16.0 ±.1.0 Aa

The values denote Mean  $\pm$  SE (N = 5).

Small latter denote difference within group.

Capital latter denote difference between groups.

**Table 4: Effect of Coffee consumption at a dose (100 mg/kg B.W) on Alkaline phosphatase level (IU/ L) in adult male Rabbits.**

W	Control group	Treated group
2	5.2 $\pm$ 0.50 Aa	6.8 $\pm$ 0.8 Ba
4	6.2 $\pm$ 0.58 Aa	15.3 $\pm$ 1.5 Bb

The values denote Mean  $\pm$  SE (N = 5).

Small latter denote difference within group.

Capital latter denote difference between groups.

### Discussion:

The coffee administration causing increasing in GOT, GPT and ALP levels. The caffeine causes stimulatory effect on hepatocytes which lead to increasing its secretion(10).

The coffee has an dilatory effect on biliary ducts which lead to dilatation of bile ducts and increase secretion of bile salt. (11).

The stimulating of biliary ducts lead to increasing ALP level which found on the membrane of hepatocytes lining bile duct also increasing in bile salt lead to elevating in TSB level.

In this study we concluded that the coffee at a dose 100 mg/ kg B.W has an stimulatory effect on Liver function(12).

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