Effct of camel's milk on the level plasma proteins total protein , albumin, and globulin in the male rabbits

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Abstract

Camel milk is a natural source of antioxidants that used to treat low plasma protein .Twenty-five male animals were purchased from local rabbits (1250-2100 g) and with age between 4- 6 months . the rabbits left 20 days to adjust and adaptive to food and location before starting the experiment . randomly The animals were divided into five groups and treated for 3 weeks. . 5 rabbits were used as control group (G5) and 20 rabbits were given a dose of acute toxic pracetamol 2000 mg / kg for 24 hours and. The first group (G1) was given orally a camel milk(Party 2) 15 ml / animal / day. The second group (G2) was given camel milk season (part 4) 15 ml / animal / day . And third group (G4) was given acetyl cysteine 140 mg / kg / day. The forth group (G4) untreated group is left to self-cure from the toxic dose pracetamol .The results showed a significant decrease ($P < 0.05$) for plasma protein total protein , albumin & globulin when treated with pracetamol toxicity. After treated with camel milk (party 2) (party 4) N-Acetyl Cystine the level of plasma protein were significant increased ($P < 0.05$) in the first and second weeks, and the persistence of low plasma protein in the toxic and abandoned group Without treatment. In the third week, all groups return to their normal level.

Keywords : camel milk , pracetamol , liver enzymes , N-Acetyl Cystine

تأثير حليب الإبل على مستوى بروتينات بلازما الدم معدل البروتين و الألبومين والكلوبلين في ذكور الأرانب

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المستخلص

يعتبر حليب الابل من المصادر الطبيعية لمضادات الاكسدة المستخدم لعلاج انخفاض بروتينات بلازما الدم وتم شراء 25 ذكر ارنب من الأرانب المحلية (1250–2100 غرام)، وبين 4–6 أشهر من العمر من السوق المحلية. تركت الأرانب 20 يوما لتكيفها وتطبعها على الغذاء والمكان قبل بدء التجربة. تم تقسيم الحيوانات بشكل عشوائي إلى خمس مجموعات وتم علاجها لمدة 3 أسابيع واستخدمت 5 أرانب مجموعة السيطرة وتم إعطاء 20 أرنب جرعة من براسيتامول سامة حادة 2000 ملغم / كغم لمدة 24 ساعة.. أعطيت المجموعة الأولى G1 فمويا حليب الإبل (Party 2) 15 مل / حيوان / يوم. أعطيت المجموعة الثانية G2 موسم حليب الإبل (Party 4) 15 مل / حيوان / يوم. ، وأعطيت المجموعة الثالثة G3 أسيتيل السيستين 140 ملغم / كغم / يوم. وتركت المجموعة الرابعة G4 المسممة دون علاج لتستعيد ذاتها من الجرعة السمية . أوضحت النتائج انخفاض معنوي ($P<0.05$) لبروتينات بلازما الدم total protein , albumin & globulin عند المعاملة بسمية البراسيتامول . وبعد المعاملة بحليب الابل Party 2 ، Party 4 والمعاملة ب N–Acetyl

Cystine نلاحظ ارتفاع معنوي (P<0.05) في مستوى بروتينات بلازما الدم في الأسبوعين الأول والثاني و استمرار انخفاض بروتينات البلازما في المجموعة المسممة والمتروكة دون علاج. وفي الأسبوع الثالث عودة جميع المجاميع الى مستواهة الطبيعي.

1- Introduction

Camal's milk is an unique to other types of milk due to its composition and its use in the treatment of diseases(13) as well as It also is used to treat high blood pressure, anti-diabetic and anti-cancer cite. In addition, lactoferrin in camel's milk has the ability to prevent the entry of hepatitis C virus into the liver cells and into peripheral blood cells and multiply it in cells and is an anti-bacterial (1). camel's milk also contains antibodies such as immunoglobulin's and lysozyme (7) . It also contains a protein similar to insulin, which works to reduce blood glucose and inhibits the process of breaking fat and stimulates the building in the liver and muscle and fatty tissues, as well as in the elimination of oxidative stress by eliminating the free radicals where the camel milk contains a high amount of vitamin C (14) . In addition, milk contains a lot of minerals such as sodium, potassium, iron, copper, zinc and magnesium as well as vitamins A, B2, C and E (9) and these acts as antioxidants and agents to help repair the liver of the effect of free radicals(3) .Acetyl cysteine was used in the treatment of the toxicity of pracetamol and some other drugs because it has the effect of removing free radicals and repairing damaged liver (17). Pracetamol or so-called acetaminophen is widely used as analgesic and antidepressant (12) . Pracetamol is also beneficial in the treatment of other severe pain in combination with NSAIDs or opioid analgesics. Pracetamol is an essential ingredient in many cold and flu recipes. Although it is safe for humans within the recommended dosage limits, excessive doses are likely to cause liver failure (6) And It is more dangerous when drunk people (11).The aim of the present study was to compare the effect of the camel milk of two different seasons (Party 4, Party 2) and acetylcysteine in the repair of liver damage physiologically.

2-Materials and methods

2-1 Study area

The study was conducted at the Animal House - Faculty of Veterinary Medicine, University of Baghdad in January 2017.Twenty-five male animals were purchased from local rabbits (1250-2100 g) and between 4- 6 months old from the local market. This experiment was conducted at the Animal House - Faculty of Veterinary Medicine, University of Baghdad . the rabbits left 20 days to adjust and apply to food and location before starting the experiment , Fodder feed and tap water were used for the duration of the experiment. randomly The animals were divided into five groups and treated for 3 weeks. . 5 rabbits were used as control group (G5) and 20 rabbits were given a dose of acute toxic pracetamol 2000 mg / kg for 24 hours and. The first group

(G1) was given orally a camel milk(Party 2) 15 ml / animal / day. The second group (G2) was given camel milk season (part 4) 15 ml / animal / day . And third group (G4) was given acetyl cysteine 140 mg / kg / day. The forth group (G4) untreated group is left to self-cure from the toxic dose pracetamol. 3 mL of all experimental animals were withdrawn direct from the heart immediately at the start of the experiment and 24 hours after the toxic dose of pracetamol was administered 2000 mg/kg. Blood was also withdrawn at the end of the third week .The blood-free and sterile blood-collecting tubes were used without any anticoagulant to perform laboratory tests on the plasma protein total protein , albumin & globulin. The centrifuge used 3000 cycles for 20 minutes to separate the serum. Blood was withdrawn direct from jugular vein at the start of the trial and after the dosage of pracetamol and after each week of treatment for 3 weeks to measure the level of liver enzymes .

2-2 Milk analysis

Take milk samples used Milk scan machine to analyze the milk of the camel in party 2 and party 4, and to know the difference in its components.

2-3 Statistical analysis

Statistical Analysis System (SAS) (2012) used data analysis to study the effect of different factors (treatment and time) on the studied traits. Morale differences were compared between the least significant difference (LSD).

3- Result

The camel's milk components decrease in the Party 4 compared to the Party 2 except the level of fat and ash they were shown to rise (Table 1)

Table 1: Difference in components of camel's milk Party 2 & Party 4 .

Content	Party 2	Party4
Fat %	2.81	3.22
Protein%	3.71	3.08
Lactose%	5.57	4.63
Solid not fat%	10.13	8.43
Ash%	0.83	0.69
Density%	1.038	1.036

Table 2: Effect of time and the effect of treatment of toxic dose of pracetamol ,camel's milk Party 2 and NAC on Total protein in males of rabbits.

Treatment	standard error ±Mean					LSD value
	Zero time	Toxic dose Of the pracetamol	1st week	2ndweek	3rd week	
G1 Party2	A 97.6 a ± 2.53	B 78.6b±2.79	A 1.36±84.5ab	A 89.00 a ±1.04	A 90.6 a± 1.75	7.425 *
G2 Party4	A 93.4 a± 1.52	BC 72.0c±1.85	B 76.75c±2.39	AB 80.6bc±2.53	A 86.6ab±1.82	8.224 *
G3 NAC	A 93.8 a± 1.74	BC 75.8 c± 2.36	A 84.75 b ±1.27	A 1.12±87.6 ab	A 1.08±87.6 ab	6.961 *
G4 Recovery	A 2.14±90.0 a	C 2.14±69.4 b	B 2.06±68.75 b	B 1.62±73.0 b	A 2.57±84.3a	7.065 *
Control	A 1.30±89.0 a	A 1.42±89.5 a	A 0.00±89.0 a	A 0.00±89.0 a	A 0.00±89.0a	4.16 NS
LSD value	6.054NS	* 8.366	* 8.092	* 9.746	6.952NS	---
***(P <0.05), NS: Not significant.**						

The different letters mean significant differences (P <0.05) The major vertically indicate significant difference (P <0.05) between the coefficients per period. The small letters horizontally indicate a significant difference (P <0.05) between periods for each transaction

Table 3: Effect of time and the effect of treatment of toxic dose of pracetamol ,camel's milk Party 2 and NAC on Albumin in males of rabbits

Treatment	standard error ±Mean					LSD value
	Zero time	Toxic dose of the pracetamol	1st week	2ndweek	3rd week	
G1 Party2	A 60.2 a2.51 ±	A 44.8 c± 2.79	AB 2.85±49.0 bc	A 53.3 a± 1.67	A 54.6 a± 0.55	* 6.72
G2 Party4	A 59.0 a± 2.76	A 44.6c±1.61	AB 48.5 bc± .082	AB 49.0bc±1.24	AB 52.0 b± 0.27	* 6.81
G3 NAC	A 58.8 a± 2.68	BC 46.4 c± 2.33	A 50.5 bc± 2.04	A 1.96±55.3 ab	A 0.37±55.3 ab	* 5.97

G4 Recovery	A 2.31±55.0 [a]	A 1.72±42.0 [b]	B 1.63±42.0 [b]	B 0.85±43.0 [b]	BC 0.52±48.0 [b]	* 6.44
Control	B 2.15±44.5 [a]	A 2.04±44.5 [a]	B 1.55±43.0 [a]	B 1.62±45.0 [a]	C 0.49±43.0[a]	4.22 NS
LSD value	* 7.35	4.93NS	* 6.15	* 6.76	* 6.07	---
) *P <0.05), NS: Not significant.						

The different letters mean significant differences (P <0.05) The major vertically indicate significant difference (P <0.05) between the coefficients per period. The small letters horizontally indicate a significant difference (P <0.05) between periods for each transaction .

Table 4: Effect of time and the effect of treatment of toxic dose of pracetamol ,camel's milk Party 2 and NAC on Globulin in males of rabbits

Treatment	standard error ±Mean					LSD value
	Zero time	Toxic dose Of the pracetamol	1st week	2ndweek	3rd week	
G1 Party2	B 37.4 [a] ± 1.75	B 33.8 [b]± 2.63	B 2.41±35.5 [bc]	B 32.3 [ab]± 1.79	B 36.0 [a]± 0.15	* 4.06
G2 Party4	B 34.4 [a]± 1.09	C 27.4[b]±0.53	C 28.25 [c]± 1.44	B 30.3[ab]±0.81	B 34.6 [a]± 0.52	* 4.22
G3 NAC	B 35.0 [a]± 1.42	C 27.4 [b]± 1.57	B 34.25 [a]± 2.26	B 1.62±32.3 [a]	B 0.74±32.3 [a]	* 4.75
G4 Recovery	B 1.64±35.0 [a]	C 0.76±25.4 [b]	C 1.08±27.75 [b]	B 0.52±26.6 [b]	B 0.69±36.3 [a]	* 5.16
Control	A 1.09±44.5 [a]	A 0.69±45.0 [a]	A 0.00±46.0 [a]	A 0.00±46.0 [a]	A 0.00±46.0[a]	3.19 NS
LSD value	* 5.733	* 5.920	* 4.612	* 5.590	* 4.826	---
) *P <0.05), NS: Not significant.						

The different letters mean significant differences (P <0.05) The major vertically indicate significant difference (P <0.05) between the coefficients per period. The small letters horizontally indicate a significant difference (P <0.05) between periods for each transaction

4-Discussion

Table (1) shows the difference in the milk components during the second and fourth parties. Milk components are affected by several environmental factors such as production rate, season, number of births, food, temperature, humidity and water availability (4). Tables (2-3-4) show decrease in the level of Total protein, Albumin due to hepatotoxicity with 2000 mg / kg pracetamol, which leads to the breakdown of hepatic cells secretion (15). This indicates that the dose of toxic pracetamol led to liver injury (16) .In the first, second and third week, increase of plasma protein Total protein ,Albumin in the G1,G2 which treated with camel milk 15 mL / rabbit / day . and that related to camel's Milk effect in removing free radicals, oxidative stress and treatment of hepatotoxicity And found of immunoglobulin's Igs (10) .as well as proved that camel milk treats liver toxicity and decrease liver enzymes (17) The difference in the level of decline between the group 1 and the group 2 due to the difference in the proportion of milk components between the two seasons (4). In the group 3 which treated with N-Acetyl Cystine 140 mg / kg / day we notice a increase in the level of plasma protein Total protein ,Albumin due to N-Acetyl Cystine has role in the treatment of the toxicity of pracetamol and the removal of free radicals (2) The group 4 observed the first week of continuous decrease of of plasma protein Total protein ,Albumin indicates the persistence of toxicity and the beginning of the return of plasma protein to normal natural in the second and third weeks where the liver worked to restore itself and the elimination of the toxicity of pracetamol and the return of the liver to its physiological functions (8) .

The level of Globulin in all treated and different times is depend on the differences value between level of Total protein and level of Albumin (5)

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