Research article

Effect of usage Iraqi camel colostrum extract on some blood parameters in albino rats

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Abstract

*This research was conducted in the Animal House of the Faculty of Veterinary Medicine / University of Qadisiyah for the period from 1/10/2016 to 1/11/2016. The aim of this research is to find out the effect of using Camel Colostrum extract on some blood parameters in albino rats. Use of the colostrum extract from camels after delivery in the first three postpartum periods (1 hour), postpartum (6 hours) and postpartum (12 hours). In this study, 30 rats of males and females, ranging from 150-200 g, were randomly divided into five groups each group contain 6 rats, All groups were infected with *E. coli* except (C) group. After that, 3 animals were killed from each group after five days of infection and treated as follows: Control group(C) The standard and distilled water were given only,(zero) left untreated, (group 1) given 0.2 ml of colostrum extract was removed after 1 hour of delivery (group 6) given 0.2 mL of colostrum extracted After 6 hours of delivery, (group 12), which was given 0.2 ml of colostrum extract taken 12 hours after birth, The results of the experiment showed a significant effect ($p < 0.05$) for the treatment with the presence of significant differences between the groups and the results showed that the superiority of the group (1) on the other groups, followed by the group(6) after 30 days of the experiment in improving the parameters of the doll due to the high proportion of antibodies in this groups.*

Key words: *E. coli*, Colostrum extraction, Albino rats, Blood parameters.

Introduction

Colostrum is a mammalian milk produced by the mammary glands at the end of pregnancy or immediately after parturition, Colostrum contains antibodies to protect newborns from diseases, Colostrum is a thick yellow liquid rich in proteins and salts and poor to fat and casinos(1). It is formed in the first days after birth (3-4 days) and is formed before the natural milk its highly bioactive molecules such as antioxidant and antihypertensive peptide (2) the camel colostrum contains more and non-protein nitrogen vitamin, ash. minerals and anti-microbial agents that has actively to activate the immune system and it contain large milk protein like (lactoferrin, alpha-lactoalbumin, serum albumin) and immunoglobulin like IgG1,IgG2,IgG3.(3).A common feature of human milk and camel milk colostrum is lack of (B-lactoglobulin) the major whey protein that is present in bovine milk which causes allergy milk children and its rich in lactoferrin Which weighs about 23g versus 0.5g in bovine colostrum Which works to antimicrobial activity of camel colostrum(4) Camel colostrum is benefits to treatment of AIDS and liver and regeneration of (5) damaged cells in the body and to treat the cardiovascular disease (6).

Materials and Methods

Ethical approval

The Animal Ethical Committee of Veterinary Medicine College, University of Al-

Qadisiyah, Iraq, has approved the present study under permission No: 422

The study is performed at veterinary medicine college of Al-Qadisiyah from October 2016 to November 2016.

Colostrum Extraction:

Iraqi camel (*Camelus dromedaries*) colostrum (40) ml are collected post – parturition at (1, 6, 12) hour respectively in sterile containers and send directly in ice box to the laboratory. The colostrum samples are double centrifuge at (5000 rpm for 10 minutes) the supernatants are infiltrated by microfiltration system with microfiltration membrane (0.22 μ m) and the extracts are refrigerated at 4C until use (7).

Laboratory Animals:

Thirty leave rats adult 10 weeks old, male & female albino rats (*Rattus norvegicus*) weighing 150-200 gm were used for in this study. They were obtained from animal's house of the veterinary medicine college, University of Al-Qadisiyah; they were housed in plastic cages. The animals were kept in a well-ventilated room, temperature of 25- 28°C with 12 hrs. Natural light and 12 hrs. darkness. The rats had free access to tap water and basal diet Food was withdrawn 12 h before induce of infection. *E. coli* but water was allowed. Each rat's in-group (zero, 1, 6, 12) received 1ml of *E. coli* (1×10^8) suspension orally and without treatment (8).

Experimental design:

(30) animals were divided randomly in to five equal groups each groups comprising of 6 Rats per each group, each rats in group(zero,1,6,12,C) received 1 ml of *E. coli*

suspension orally and leave without treatment then was killed three animals of each group and the blood were obtained from rats after 5 days of inoculation then treatment with colostrum extract as following:

1- Control groups (C): were received standard diet and distilled water only.

2-(group Zero) were administrated orally 1cc of *E. coli* (1×10^8 cell/m) only.

3-(group1): received 1 ml of *E. coli* suspension orally then administrated orally colostrum extract (0.5 ml) taken after the first hour of parturition.

4-(group 6): received 1 ml of *E. coli* suspension orally then administrated orally colostrum extract (0.5ml) taken after 6 hours of parturition.

5- (Group 12): received 1 ml of *E. coli* suspension orally then administrated orally colostrum extract (0.5 ml) taken after 12 hours of parturition.

After that three animals were killed from each group after 30 days of experimentation

Collection of blood samples:

Blood was withdrawn directly from the heart using a (5 ml) syringe and 2 ml of blood in the blood collection tubes containing the anticoagulant blocker (EDTA) for performing the blood tests then enter the laboratory for blood tests by using Auto Hematology Analyzer system. The result were analyzed by analysis of variance (ANOVA) followed by LSD using SPSS to find the significant between the averages

Table (1): (mean $\pm$ SE) post treatment with camel colostrum extract in rats with *E. coli* (Neutrophils, Lymphocytes, Monocytes, WBC)

Parameters	group(Zero)	Group(1)	Group(6)	Group(12)	group(C)
Neutrophils $10^3/\mu$ l	3.45 ^b $\pm$ 0.38	0.88.3 ^a $\pm$ 0.28	2.85 ^b $\pm$ 0.30	^c $\pm$ 0.112.22	^a $\pm$ 0.282.53
Lymphocytes $10^3/\mu$ l	3.72 ^c $\pm$ 0.24	5.10.5 ^a $\pm$ 0.31	4.90 ^b $\pm$ 0.30	4.80 ^b $\pm$ 0.28	^a $\pm$ 0.385.20
Monocytes $10^3/\mu$ l	0.77 ^c $\pm$ 0.054	0.35 ^a $\pm$ 0.063	0.60 ^b $\pm$ 0.042	0.68 ^b $\pm$ 0.047	^a $\pm$ 0.050.45
WBC $10^3/\mu$ l	0.23 ^c $\pm$ 10.15	0.51 ^a $\pm$ 9.25	0.43 ^b $\pm$ 8.37	0.355 ^b $\pm$ 7.3	^a $\pm$ 0.398.25

The different letters within the same column indicate significant differences below the probability level (P<0.05)

Table (2): (mean $\pm$ SE) post treatment with camel colostrum extract in rats with *E. coli* (RBC, HGB, PCV)

Parameters	group(Zero)	group(1)	Group(6)	Group(12)	group(C)
RBC($10^6/\mu$ l)	6.5 ^c $\pm$ 1.28	7.2 ^a $\pm$ 1.68	7.1 ^a $\pm$ 1.64	6.8 ^b $\pm$ 1.30	2.38 ^a $\pm$ 7.6
HGB(g/ dL)	10.36 ^c $\pm$ 0.49	13.55 ^a $\pm$ 0.4	13.8 ^a $\pm$ 0.30	12.9 ^b $\pm$ 0.21	^a $\pm$ 0.2813.9
PCV	36 ^c $\pm$ 2.4	42.3 ^a $\pm$ 1.1	41 ^a $\pm$ 1.7	39 ^b $\pm$ 1.2	^a $\pm$ 0.345

The different letters within the same column indicate significant differences below the probability level (p <0.05)

Results

The results of the experiment showed a significant increase in neutrophils and monocyte cells in the group (zero) with *E. coli* (3.45 ± 0.38) and (0.77 ± 0.054) respectively, compared with the (C) group and other groups, which caused to increase the total number of white cells at the same time there is decrease in number of lymphocyte (3.72 ± 0.24) Table (1) also The results of (zero) group in Table (2) indicate a significant. decrease in the concentration of hemoglobin (10.36 ± 0.49), the number of RBC (10.36 ± 0.49) and PCV (36 ± 2.4) and after treatment with colostrum The results of the group (1) showed an improvement in blood parameters RBC (7.2 ± 1.68), Hb (13.55 ± 0.4), PCV (42.3 ± 1.1) in which the cause drop in the number of Neutrophils ($0.88.3 \pm 0.28$) and Monocyte (0.35 ± 0.063) and increase in the number of lymphocyte ($5.10.5 \pm 0.31$) and this improvement caused

lower in the number of total white blood cells (9.25 ± 0.51). (Group 1) recorded the highest ratio in the number of Lymphocyte (5.10 ± 0.33) and the lowest proportion in the number Neutrophil and Monocyte As it reached (2.88 ± 0.28) (0.35 ± 0.063) Respectively, all so highest ratio in concentration of Hemoglobin (13.55 ± 0.27) and number of RBC (7.2 ± 1.68) and pcv (42 ± 1.1) The results also showed no significant differences between group (1) and group (C) And there were no a significant differences between the group (1) and the (6) group in number of RBC and the concentration of Hg and PCV At the same time there are significant differences between the two groups for the number of neutrophil ,Monocyte, lymphocyte and WBC There were also significant differences between group (12) and group (1) all so group (C).

Discussion

The cause of these changes in the blood parameters is due to the systemic inflammation caused by these bacteria and other types of bacteria such as *salmonella* and. *E coli* (10). These infections cause the migration of Neutrophil and Monocyte to the blood vessel; Neutrophils are a type of phagocyte and are normally found in the bloodstream. During the beginning (acute) of inflammation and bacterial infection, exposure¹ and some cancer, , neutrophils are one of the first responders of inflammatory cells to migrate towards the site of inflammation They migrate through the blood vessels the through interstitial tissue, following chemical signals such as Interleukin, Leukotriene and H₂O by the chemotaxis (11) and increased number of monocytes in the blood occurs in response to chronic infections, in autoimmune disorders, increase in the number of macrophages in parts of the body other than in the blood (such as the lungs, skin), this occur in response to

infections (12). Also, increase number of lymphocyte because the lymphocyte is a part of the system. The cause of these changes in the blood parameters is due to the systemic inflammation caused by these bacteria and other types of bacteria such as *salmonella* and. *E coli* (10). These infections cause the migration of Neutrophil and Monocyte to the blood vessel; Neutrophils are a type of phagocyte and are normally found in the bloodstream. During the beginning (acute) of inflammation and bacterial infection, exposure¹ and some cancer, neutrophils are one of the first responders of inflammatory cells to migrate towards the site of inflammation They migrate through the blood vessels the through interstitial tissue, following chemical signals such as Interleukin, Leukotriene and H₂O by the chemotaxis (11) and increased number of monocytes in the blood occurs in response to chronic infections, in autoimmune disorders, increase in the number of macrophages in parts of the

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