

CLINICAL AND LABORATORY EVALUATION OF VITAMIN A AND BETA CAROTENE IN LOCAL SHEEP BREED OF BASRA, BASRA_ IRAQ

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ABSTRACT

The study was conducted on (96) local sheep breeds of different ages and both gender reared in Basrah, Iraq. Suspected animals show signs of night blindness, abortion of pregnant ewes, diarrhea with passing of normal small fecal materials ,nervous sings (such as paralysis of skeletal muscles, blindness due to constriction of the optic nerve canal, convulsions encephalopathy). Moreover diseased animals were also show panting and changing of skin .The levels of vitamin A and Beta carotene were estimated by ELISA test and results showed that local sheep suffer from hypo vitaminosis A with mean level of(1.8 nmol/l). However according to regions of Basrah deficiency of vitamin A and carotenes respectively were indicated of center of Basra (1.7nmol/land 11.2 ng/ml). AlQurna (1.7 nmol/l and 15.9 ng/ml) .Azzubair (2.1 nmol/l and 26.3 ng/ml). Shateelarab (1.2nmol/l and 17.7 ng/ml).and Abulkhaseeb (2.0 nmol/l and 16.8ng/ml)

It have been concluded that local sheep breeds of Basra province were suffer from hypovitaminosis A, therefore animals reared in those area should be screened periodically.

INTRODUCTION

Sheep is most important livestock animal in Iraq as well as in Basra because it's small size, short life breeding, can reproduce twice in a year and it characterized by the birth of twin.(1). Sheep breeds are multi-purpose, most are best suited to meat, milk, or wool production seldom all three. Production practices usually vary according to the purpose of the flock(2).

Sheep depends in their diet on grazing. The roots of plants that are of green color slant to be rich orange vitamin A and carotenoids, which are characterized by their solubility in fat(3) the deficiency of vitamin A mostly related to insufficient supply of this vitamin in the diet, otherwise impaired its absorption from the intestine.(4)

Little information had been provided on vitamin A deficiency in Basra province therefore the study were aimed to determination and estimation of vitamin A level and B₂-carotene in local sheep breeds reared of Basra province and to registration of the main clinical manifestation showed by affected animals(5).

MATERIALS AND METHODS

Animals:

Ninety six local sheep breeds of different ages and of different ages of both gender which were collected randomly from four districts of Basra province ,(28) from center of Basra,(22)from AlQurna,(16)from Azzubair, (15)from Shatt El-Arab and (15)from Abulkhaseeb.

Blood samples:

Ten milliliter of blood were drained from jugular vein puncture of each suspected animals for further serum analysis of vitamin A and beta carotene using ELISA test interact(Gen Asia. Chine)

Statistical analysis:

Using the SPSS to show mean values of mean standered error of mean . at $P \leq 0.05$.

RESULTS AND DISCUSSION

Results showed that mean level of vitamin A level were (1.8 ± 0.1)nmol/l with range between (1.2 ± 0.3 _ 2.1 ± 0.3) nmol/l, whereas level of B- carotene were (16.7 ± 1.6)ng/ml and ranged (11.2 ± 3.0 _ 26.3 ± 3.9 ng/ml) Table (1).such results less than showed by (6,7,and8) which were (1570 , 990, 1200) nmol/l, and { (99.7,48.5) ng/ml },the level of vitamin A and B-carotenerespectively .otherwise the result was nearer to (9) which were (10)nmol/l (30) ng/ml that he calculated level of vitamin A and Beta-carotene .

Table (1) the level of vitamin A and B-carotene in local sheep breeds in Basrah

Region	No.ofanimals	VitaminA (nmol/l)	Beta-carotene ng/ml
Center of Basra	28	1.7 ± 0.2	11.2±3.0
Al-Qurna	22	1.7 ± 0.3	15.9±3.3
Azzuber	16	2.1 ± 0.3	26.3±3.9
Shatarab	15	1.2± 0.3	17.7±4.1
Abolkhaseb	15	2.0 ±0 .3	16.8±4.1
Total	96	1.8±0.1	16.7±1.6

Values are mean and slandered error of mean . at $P \leq 0.05$.

Moreover table(1) shows that vitamin A ratio, beta-carotene low in all areas of Basra, has reason to return little or no vitamin A or provitamin A(beta-carotene) in the diet as well as parasitic infections, especially endoparasites,(10) high-temperature and grazing for long periods and the lack of water all that adversely affect the animals appetite (11). That may related to primary vitamin A deficient precursor in diet (12), specially decreased amount of green food (13), also the Beta carotene in this study lower than found by (14) who explained that dark green or dark yellow plants such as carrot contain carotenoids like Beta carotene which is provitamin A, Which converted within intestinal mucosa to retinol during absorption (15,16). In general the primary hypovitaminosis A presented by state of its precursor in diet, The wheat and barley were evidenced quality for vitamin A(17) . Otherwise dried green food and long summer day affect negatively on leaf plant carotenoids contents(18).Azzuber sheep will higher level of vitamin A and Beta carotene because this sheep spent more time on grazing .The most important clinical sings that associated with vitamin A deficiency in sheep were recorded in table(2).There are 29.1% sheep suffer from night blindness.Eye proteins need about 45 minutes for regeneration in the retina in the healthy eye, but at low rate of retinol(Vitamin A)there is inability to produced stated amount of rhodopsin (visual purple)which lead to inability to see in dim light(19), the ability to vision absent in this period.

Table(2)Clinical findings showedby diseased local sheep breeds

Clinical sings	No. of animal	Vitamin A(nmol/l)	Beta-carotene ng/ml
Night blindness	28 (29.1%)	1.7 ± 0.2	11.2±3.0
Abortion	22 (22.9%)	1.7 ± 0.3	15.9±3.4
Nervous signs	16 (16.6%)	1.3 ± 0.3	15.7±4.0
Diarrha	14 (14.5%)	2.0± 0.3	20.5±4.2
Skin changes	8 (8.3%)	1.5 ±0.5	21.9±5.6
Panting	8 (8.3%)	1.9 ±0 .5	25.9±5.6

Values are mean and standard error of mean . at $P \leq 0.05$.

According to table (2) there are 22.9% from ewe experience from abortion was found in ewe suffer from vitamin A deficiency ,That vitamin A is important for organ formation during fetal growth (20).Other recorded that deficiency of vitamin A ewe gave weak lambs (21)

As well as 16.6% sheep be diagnosed with nervous signs subsequent to damage of nervous system ,a damage for peripheral nerve roots cause paralysis, While increased intracranial presser manifested by convulsion especially for young animal(22)

Also there are 14.5%from sheep was undergo from diarrhea but hypovitaminosis A was not causes diarrhea (23) ,But experimental vitamin A deficiency in lambs will lead to degeneration and disruption of capillary endothelia of microvilli in small intestine .So vitamin A supplement helpful used in the treatment of diarrhea (24). The evidence for diarrhea in present study may related to other affect.

Moreover 8.3% sheep suffer from skin changes followed with vitamin A deficiency due to skin epithelial cell integrity will impaired , So the skin became dry scaly (like barn) in associated of deficit in retinoic acid (25) .

The panting: most author found which found that after Metabolism of vitamin A There are two receptors found in 2 similar groups—retinoic acid receptors and retinoid X receptors—and belong to a super family of nuclear receptors that act as transcription factors, which promote the physiologic effects on DNA transcription(26) These binding properties and transcriptional actions on the nucleus are responsible for the antiproliferative and anti-inflammatory effects of the retinoid. his explains the importance of vitamin A to protect the body and increase immunity against diseases panting with hypovitaminosisA,Other explained that panting may related to infection due to decrease immune response (27,28) .

التقييم السريري والمختبري لنقص فيتامين (أ) و البيتا كاروتين في الضأن المحلي لمحافظة البصرة، البصرة، العراق

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الخلاصة

أجريت هذه الدراسة على (96) رأساً من الضأن المحلي بأعمار مختلفة ومن كلا الجنسين في محافظة البصرة، العراق ز كانت حيوانات الدراسة تعاني من أعراض العثو الليلي ، الإجهاض في النعاج الحوامل ، الإسهال ،إعراض عصبية فضلاً عن ذلك فقد أظهرت حيوانات الدراسة أيضاً علامات اللهاث والتغيرات في الجلد .

تم تقدير مستوى فيتامين (أ) و البيتا كاروتين في المصل باستخدام فحص الاليزا وأظهرت النتائج أن الضأن تعرض لنقص فيتامين (أ) إذ كان معدل مستوى الفيتامين(1.8نانومول /لتر) في أمصال حيوانات الدراسة ، كما لوحظ خلال من نتائج الدراسة أن مستوى نقص فيتامين (أ) و البيتا كاروتين وبحسب مناطق المحافظة في مركز البصرة (1.7 نانومول /لتر و 11.2 نانوكرام/مل)، القرنة (1.7نانومول /لتر و 15.9نانوكرام/مل)،الزبير (2.1نانومول /لتر و 26.3نانوكرام/مل)،شط العرب (1.2نانومول /لتر و 17.7 نانوكرام/مل)، وفي ابي الخصيب (2.0نانومول /لتر و 16.8 نانوكرام/مل).

استنتج من هذه الدراسة ان معظم أغنام محافظة البصرة تعاني من نقص فيتامين (أ) لذا ينصح بالفحص الدوري لها .

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