Effect of different levels of vitamin E in some semen Biochemical Parameters in Awassi rams

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Abstract

The ram seminal plasma is a complex fluid, which serves as a carrier for the spermatozoa on their journey into the male testes, and make role as nutrition and source of energy.

The objective of this study was to investigate the enzyme activities in seminal plasma. A Spartate Amino transferees (AST), Alanine Amino transferees (ALT), and fructose in seminal plasma from twelve mature Awassi rams 14-16 month of age. Rams divided to three group 1st group (T1) served as a control, Second and third group (T2, T3) were given vitamin E at a level of 200 and 300 IU/Week respectively. The Overall mean activity of (AST:ALT)in T1,T2,T3 were (8.60±1.49, 6.71±1.48, 5.57±1.59: 5.96±1.06, 6.50±1.57, 2.91±0.77) UE/ML and fructose (3.80±0.49, 4.17±0.85, 3.33±0.57) Mm/L at temperatures ranging from 10-16°C where the impact of vitamin E in (AST,ALT) groups (9.20±2.0, 8.96±2.16, 7.43±1.06: 5.52±1.67, 2.69±0.28, 5.24±0.79) and fructose (2.67±0.21, 3.43±0.55, 4.54±0.75).

Keywords: vitamin E, semen Biochemical character, Awassi rams AST,ALT, Fructose.
Introduction

Awassi is one of the dual-purpose, fat-tailed sheep breeds which can be accepted as a sheep-milk resource in south-west Asia (Iraq, Jordan, Palestine, Lebanon and Turkey). It also exists in Europe, Australia, New Zealand, and China. The breed is well adapted to harsh conditions and capable of producing and reproducing under these circumstances (5).

Vitamin E (Vit E) important nutrients that can affect several biological processes including spermatogenesis and semen quality (10 and 17), and reproduction (9).

Seminal plasma which is a complex mixtures created from tests can effect sperm morphology, mortality, acrosome reaction and fertility. (12 and 14). In addition, environmental circumstances are also effect in sexual performance and semen quality in rams such ambient temperature, humidity, thermal radiation and air speed (3 and 16).

AST, ALT enzymes and fructose are essential for metabolic processes which provide energy for survival, motility and fertility of spermatozoa. Previous studies are generally related to the comparisons of seminal plasma composition between males of different fertility or the isolation and characterization of specific seminal proteins that could influence sperm capacitation and fertilization. However, the correlation between specific seminal proteins and semen characteristics in crossbred rams with differing fertility has not hitherto been well studied (1).

The major aim of this study is to provide valuable information on effect of vitamin E in Biochemical Parameters (ALT, AST and fructose concentrations) in semen of Iraqi awassi rams to improve semen quality and raise the sexual efficiency in local animals and increase fertility and use this information as guidelines or indicators for the management strategies for ewes under the farming conditions for selecting and improving the performance of domestic animals depending on this indicators.

Material and methods

The experiment was conducted from 2/1/2015 to 28/2/2015 in Iraq, the cold weather and air temperatures hovered between 10-16°C in the
shade (Source: U.S. National Climatic Data Center, Asheville, N.C) (4) on a farm located in the Ruminant Research station / Abu – Graib / Department of animal Resources /Public Authority for Agricultural Research/ Ministry of Agriculture. Twelve adult Iraqi Awassi rams 14-16 month of age were kept in semi open sheep pens. The daily hours devoted to outdoor feeding - related activity supplement with hay and some barley were randomly assigned to three groups. Rams in the 1st group (T1) served as a control. Second and third group (T2, T3) were given vitamin E at a level of 200 and 300 IU/Week respectively. Semen was collected using an artificial vagina once each 15 days through a period, Then we measured the chemical qualities of semen plasma enzyme (ALT and AST) and the concentration of fructose in the following manner. The proportion of fructose was measured in semen plasma using the spectral analysis method described by the company Aracomex, and supports the principle of this analysis is that the fructose pink color when heated with resorcinol and the presence of hydrochloric acid can be measured in the manner and extent of spectral 546nm (6). Estimate the concentration of enzyme Glutamic Oxalate Transaminase: Saucepan (ALT) in plasma semen as instructed by the company bioassay system America, which he described by Bergmeyer et al (2) The concentration of (ALT)was estimated in the plasma of semen as instructed by the company and the Canadian described by Ishiguro et al (8).

Statistical analysis
Data analysis was performed using SPSS software program (15) All values were expressed as Mean ± standard error of mean (S.E.M.). Spearman’s correlation coefficient test was applied to examine the correlation between seminal plasma protein fractions with months and vitamin of the semen. Differences were considered to be statistically significant at P < 0.05 under a liner model: Yij = M+ti+pj+eijk
Where
M=over all mean
Ti= Effect of temperature (10-16 0C)
Pj= Effect of vitamin (control, 200ID, 300ID).
Eijk: Random error
Table 1: Effect temperate and vitamin E in AST, ALT and Fructose in seminal plasma.

<table>
<thead>
<tr>
<th>Factors Affecting</th>
<th>AST UE/ML³</th>
<th>ALT UE/ML³</th>
<th>Fructose Mm/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>T1</td>
<td>8.60±1.49A</td>
<td>5.96±1.06A</td>
<td>3.80±0.49A</td>
</tr>
<tr>
<td>T2</td>
<td>6.71±1.48A</td>
<td>6.50±1.57A</td>
<td>4.17±0.85A</td>
</tr>
<tr>
<td>T3</td>
<td>5.57±1.59A</td>
<td>2.91±0.77B</td>
<td>3.33±0.57A</td>
</tr>
<tr>
<td>M</td>
<td>6.96±1.51</td>
<td>5.12±1.11</td>
<td>3.77±0.61</td>
</tr>
<tr>
<td>Vitamin E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>9.20±2.0A</td>
<td>5.52±1.67B</td>
<td>2.67±0.21A</td>
</tr>
<tr>
<td>T2</td>
<td>8.96±2.16A</td>
<td>2.69±0.28A</td>
<td>3.43±0.55B</td>
</tr>
<tr>
<td>T3</td>
<td>7.43±1.06A</td>
<td>5.24±0.79B</td>
<td>4.54±0.75B</td>
</tr>
<tr>
<td>M</td>
<td>8.44±1.01</td>
<td>4.48±0.79</td>
<td>3.55±0.48</td>
</tr>
</tbody>
</table>

Averages bearing different letters within the same column means that there were significant differences (p<0.05).

**Results and discussion**

The results of semen quality parameters of 12 Awassi rams are summarized in Table 1. Enzymes ALT, AST and Fructose were significantly increased between treatments.

Temperature does not have a significant effect on the enzyme AST and low temperature did not show any changes (16) conscious values and this result consistent with his findings by Sharma et al (14).

This resembles his findings in (11) did not get an increase in the concentration of fructose in different temperatures.

The impact of vitamin E on the enzyme AST was not significant, enzyme ALT and fructose was increased significantly in Treatment 2 and 3 (Table 1) showed the level of second and third group as surpassed the two treatment for the first, second. The impact of vitamin E on fructose has moved in moral and over took the second and third treatment to the control treatment. This may be due to the role of vitamin E as a single antioxidant.
factors (17) which could prevent from free radical and increase fructose (decrease free radical led to increase fructose), and reduces cold-induced oxidative stress (13). Vitamin E in the second treatment reduced of oxidative stress because supportive to combat liver damage (18).

Reference


parameters of male rabbits.

تأثير مستويات مختلفة من فيتامين E في الصفات الكيمياوية للسائل المنوي في الكباش العواسي

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الملخص

تعتبر البلازما المنوية الكباش سائل معقد حيث يساعد الحيوان في رحلتها داخل الجهاز التناسلي الذكري ويتم على تغذيتها وتوفير مصدر الطاقة اللازمة لها

 موضوع هذه الدراسة يمحور حول فعالية إنزيمات بلازما السائل المنوي (AST, ALT) للكلب العواسي العراقية التي كانت بعمر (16-14) أشهر تحت ظروف التربية في النظام Fructose بشبه المكفت ودرجة حرارة 10-16م.

 تم تقسيم الكلب إلى ثلاثة مجموعات، المجموعة الأولى والتي كانت تحت تأثير فيتامين E 200 وحدة دولة السمنية وثانيتها 300 وحدة دولة السمنية حيث أظهرت إنزيمات AST, ALT T1, T2 T3, UE/ML³

الكاملات المفتاحية: فيتامين E, البلازما المنوية, الكباش العواسب العراقية.