This study was conducted to investigate the effect of (Saccharomyces cerevisiae) supported with zinc and selenium on the lipid profile. Twenty-one Iraqi males sheep were used aged (1-1.5) years and the weight mean approximately (38±4) kg. Experiment animals used divided randomly into three treated groups each group have 7 males. All males were fed on the same ration. The first group was considered as a control group without treatment (T1), the second group (T2) were given yeast enriched with zinc (Saccharomyces cerevisiae-zinc) with dosage (0.2 g/kg/bw), the third group (3) was given yeast enriched with selenium (Saccharomyces cerevisiae-selenium) with dosage (0.03 g/kg/bw). The results showed significant (P≤0.05) differences control group compare with the other two-treated groups (T3 and T2) in triglyceride, LDL, VLDL and HDL. The results indicate to significant differences (P≤0.05) of (T2 and T3) compare with the control group by HDL. From the results concluded that there synergistic effect of Saccharomyces cerevisiae with zinc and selenium as organic form (Saccharomyces cerevisiae-zinc/selenium) could be attributed to improved animal health.

Keywords; Saccharomyces cerevisiae, Zinc, Selenium, lipid profile, rams
Introduction
Livestock and animal production are important in supporting the economy of our country. Animal production has deteriorated in Iraq because of war this deterioration of the economic situation in all ways compared to developed countries. Therefore, our research focusing on the improvement of animal production. In the last decades, feed additives were used, which include the use of probiotics, which are can provide a healthy animal benefit and improve feed digestibility (20). In addition, the antioxidants were used to improve production and reproduction. The new trend in the types of additives, including the use of zinc-supported yeast and organic selenium to improve production efficiency and improve the physiological characteristics of farm animals, which contribute to solving part of the problem. Bread yeast (SC) was used to improve fermentation of the rumen, to promote microbial growth, and to improve the stability of rumen fermentation. In addition, yeast supplementation provides some nutrients during digestion that affect microbial populations and their function in the rumen. From other hand, yeast improvement the body weight and feed conversion efficiency and carcass traits (2). Several studies have shown beneficial (7). Selenium is a rare element that is naturally found in many foods and is available as a dietary supplement. Selenium is a necessary nutrient for humans and animals. It is made up of more than twenty types of selenoproteins that play an important role in the metabolism of thyroid hormone, DNA synthesis, reproduction, anti-oxidant and injury protection (17). Animal health and physiological performance are also significantly affected by minerals, including zinc, and improved production performance is achieved through the addition of energy, protein, and mineral diets in farm animals during pre-puberty (6). Zinc is the second greatest rich element (after iron) and necessary for all animals and human. It is found in the form of (Zn2) and is not oxidized under physiological conditions, which clarifies why zinc achieves several physiological roles in a variability of biological processes (11). The addition of organic zinc to the animals' rations will affect the early puberty and affect the activity of the enzyme antioxidant and DNA synthesis (3). Therefore, the study aimed to evaluate the yeast supported by selenium and organic zinc in the lipid profile of local sheep males.

Materials and methods:
1- Animals of experiment
Twenty-one males’ sheep were used (1-1.5) year of age, and the method of teething was used to estimate their ages. Animals were fed a concentrated diet (3 % from body weight) and fed straw with alfalfa ad libitum.

2- Experimental design;
The males were divided randomly into three treated groups each group have 7 males. All males were fed on the same ration. The first group was let without treatment as a control group (T1), the second group (T2) was given yeast enriched with zinc (Saccharomyces cerevisiae-zinc) with dosage (0.2 g/kg/bw) (13), the third group (3) was given yeast enriched with selenium (Saccharomyces cerevisiae-selenium) with dosage (0.03 g/kg/bw) (13).

3- Blood samples collection;
The blood samples were collected from the jugular vein during the (First, fourth, eighth, eleventh and thirteenth weeks) to estimate the lipid profile (Triglyceride, cholesterol, High density lipoprotein (HDL), very low-density lipoprotein (VLDL). and low density lipoprotein (LDL).
The concentration of cholesterol was measured by enzymatic decomposition method according to (16) using the kit developed by Human company (German).
The concentration of triglycerides in blood was estimated by the method (4) and using the kit manufactured by the Spanish company Linear Rchmicals. The concentration of high-density lipoprotein (HDL) in the serum was determined according to (8) by using the kit manufactured by Human company (German). While VLDL was calculated by the equation according to (19) \( \text{VLDL} = \frac{\text{triglycerides}}{5} \). Also, LDL was calculated by the equation according to (9).

\[
\text{LDL} = \text{Cholesterol} - (\text{HDL} + \text{VLDL})
\]

4- Statistical Analysis

The data were presented as Mean and Standard Error (Mean±SE) and subjected to statistical analysis using Two-way analysis of variance (ANOVA). In addition, post hoc test was used to find out the Least Significant Differences (LSD) between different means \((p \leq 0.05)\). Statistical Package for the Social Sciences Program (SPSS) version 25 package was used for this purpose (21).

Results and discussion:

1- Triglyceride;
Table (1) shows a significant decrease \((P \leq 0.05)\) in the triglyceride of the third group (T3) compared with the control group at thirteen week.

2-Cholesterol;
Table (2) shows there is no significant difference in the total cholesterol concentration between the second and third treatments compared to control. However, a mathematical differences between the periods within the column for all treatments groups compared to the control was recorded.

3-High density lipoprotein (HDL)
Table (3) shows a significant difference \((P \leq 0.05)\) in the HDL-C concentration in the second and third treated groups compared with the control group at thirteenth week.

And significant differences \((P \leq 0.05)\) were observed between the time interval within the last week of the experimental study for the third treatment compared with the first week, while the a significant increment \((P \leq 0.05)\) was observed between the period of the second treatment from the fourth week to the last week of the experiment.

4-Low density lipoprotein (LDL-C)
Table (4) showed a significant decrease \((P \leq 0.05)\) in the LDL-C concentration in the second and third groups compared with the first treatment group in week thirteen. table (4) was seen at the last week of the experiment. Also observed significant decreases \((P \leq 0.05)\) between the time interval within one column in the last week of the experiment for the second and third treatments compared to the initial weeks of both treatments.

5-Very low-density lipoprotein (VLDL)
Table (5) shows a significant decreases \((P \leq 0.05)\) in the VLDL concentration in the third treatment compared with the control and the second treatments in the 11th and 13th weeks. In addition, the second group was recorded a significantly decrement \((P \leq 0.05)\) compared with the first control at 13. While there were no significant differences between the second and third treatments. The results showed significantly differences \((P \leq 0.05)\) between the periods of all groups.
Table (1) the effect of yeast enrichment with zinc and selenium on the triglyceride of the local males sheep (mg/dl).

| Treatment Time | Control group T1 | Group 2 (T2) (Y+Zn) (0.2 mg/kg/ bw) | Group3 (T3) (Y+Se) (0.03 mg/kg/ bw) |
|----------------|------------------|------------------------------------|-------------------------------------|
| First week     | 55.13±2.51       | 53.64±1.24                         | 55.29±2.43 A                        |
| Fourth week    | 54.55±2.25       | 53.51±2.21                         | 53.90±1.07 A                        |
| Eighth week    | 54.82±2.87       | 54.67±2.65                         | 49.47±2.92 AB                       |
| Eleventh week  | 53.32±1.85       | 49.48±2.27                         | 49.45±2.49 AB                       |
| Thirteenth week| 53.74±3.26 a     | 49.26±1.90 Ab                      | 47.25±2.65 B b                      |

LSD= 6.05

The various capital letters refer significant differences between times within one column at (P≤0.05)
The various small letters indicate significant differences between the groups within one raw at (P≤0.05).

Table (2) the effect of yeast enrichment with zinc and selenium on the cholesterol of the local males sheep (mg/dl).

| Treatment Time | Control group T1 | Group 2 (T2) (Y+Zn) (0.2 mg/kg/ bw) | Group3 (T3) (Y+Se) (0.03 mg/kg/ bw) |
|----------------|------------------|------------------------------------|-------------------------------------|
| First week     | 79.59±1.04       | 78.42±3.22                         | 76.80±2.54                          |
| Fourth week    | 84.49±2.73       | 82.95±2.88                         | 81.43±2.58                          |
| Eighth week    | 86.92±2.69       | 83.31±3.89                         | 84.50±2.15                          |
| Eleventh week  | 87.13±1.57       | 88.44±2.63                         | 85.63±2.48                          |
| Thirteenth week| 89.64±2.79       | 89.12±2.67                         | 88.80±3.02                          |
Table (3) the effect of yeast enrichment with zinc and selenium on the High density lipoprotein (HDL) of the local males sheep (mg/dl).

| Treatment Time | Control group T1 | Group 2 (Y+Zn) T2 (0.2 mg/kg/ bw) | Group3 (Y+Se) T3 (0.03 mg/kg/ bw) |
|----------------|------------------|----------------------------------|----------------------------------|
| First week     | 36.71±1.51       | 36.12±2.34 B                     | 33.88±2.01 C                     |
| Fourth week    | 39.20±2.43       | 42.47±2.37 A                     | 38.01±2.32 BC                    |
| Eighth week    | 37.26±1.19       | 42.16±3.71 A                     | 34.98±2.0 C                      |
| Eleventh week  | 38.89±1.62       | 41.58±1.84 A                     | 39.49±3.51 B                     |
| Thirteenth week| 39.81±0.95 b     | 44.31±2.06 A a                   | 44.68±2.71 A a                   |

LSD= 5.40

The various capital letters refer significant differences between times within one column at (P≤0.05)

The various small letters indicate significant differences between the groups within one raw at (P≤0.05)

Table (4) the effect of yeast enrichment with zinc and selenium on the Low density lipoprotein (LDL) of the local males sheep (mg/dl).

| Treatment Time | Control group T1 | Group 2 (Y+Zn) T2 (0.2 mg/kg/ bw) | Group3 (Y+Se) T3 (0.03 mg/kg/ bw) |
|----------------|------------------|----------------------------------|----------------------------------|
| First week     | 38.97±1.82       | 37.17±1.66 A                     | 38.10±1.04 A                     |
| Fourth week    | 39.42±0.96       | 37.15±1.21 A                     | 39.71±1.14 A                     |
| Eighth week    | 37.75±2.50       | 39.08±2.00 A                     | 36.82±0.89 A                     |
| Eleventh week  | 38.72±1.92       | 37.37±1.07 A                     | 36.74±2.23 A                     |
| Thirteenth week| 36.15±2.11 a     | 32.31±2.09 B b                   | 31.36±1.81 B b                   |

LSD= 4.27

The various capital letters refer significant differences between times within one column at (P≤0.05)

The various small letters indicate significant differences between the groups within one raw at (P≤0.05)
Discussion

The results of this study were consistent with the findings of others study of (10) (12), whom observed the added of Se. to the ration recorded a significant difference in the level of triglycerides, cholesterol, VLDL and HDL (5). The result also agreed with the result that obtained by (22) that result revealed to the improvement of triglyceride after added the zinc to the goats' ration. In addition, it was agreed with (1), whom observed significantly decreased of triglyceride compared with a control group after added selenium and zinc of 45 mg and 4366 mg to the sheep ration respectively,The decreased of lipid concentration may be due to the fact that selenium and zinc play an important role as an antioxidant and reduce free radicals and thus can reduce the presence of harmful fats (triglyceride, LDL, VLDL) and increase the level of HDL (18 ; 14). The absence of significant differences in the concentration of cholesterol between the treated groups may be explained by that the cholesterol source of the synthesis of steroids hormones. Cholesterol is a steroid fatty substance found in all animal tissues, especially in cell membranes, also plays a major role of the formation the sexual hormones. From other hands, the reduction of lipid profile may be due to the fact that selenium and zinc can enhance the metabolism of these nutrients. Selenium and zinc are critical to fat metabolism. In addition, there are two main factors in supporting glutathione peroxidase, these enzymes have an important role in fat metabolism (15).

Conclusion:

From the results may be concluded that the using of yeast enriched with zinc and selenium (Saccharomyces cerevisiae-zinc/selenium) lead to improve lipid profile and animal health, this improvement was done by synergism effective of Saccharomyces cerevisiae with zinc and selenium as organic form.

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