A total number of 277 cattle (120 apparently healthy cattle and 157 under disease conditions), all animals were belonged to Beni-Suef governorate. The apparently healthy cattle were belonged to two farms (faculty of veterinary medicine-farm and El-Zeiton farm), these animals were subdivided according to age, sex, and reproduction cycle into groups to study the effect of age, sex, and reproduction cycle to the levels of vitamin A, β-carotene, vitamin E, and some blood biochemical parameters (AST, ALT, SAP, total protein, albumin, globulin, total lipids, cholesterol, triglycerides, and creatinine).

The diseased cattle were divided into three groups:

I. **The first group** consists of 40 bulls with sings of vitamin A deficiency.
II. **The second group** consists of 48 bulls, were subdivided into the following groups:
    - Group 1: control animals consist of 12 bulls.
    - Group 2: consists of 19 bulls suffering from urinary bladder rupture.
    - Group 3: consists of 9 bulls suffering from respiratory affections.
    - Group 4: consists of 8 bulls infesting with liver flock.
III. **The third group** consists of 69 cows, was subdivided into:
    - Group 1: consists of 9 apparently healthy cows.
    - Group 2: consists of 25 brucellosis infected cows.
    - Group 3: consists of 10 tuberculosis infected cows.
    - Group 4: consists of 13 mastitic cows.
    - Group 5: consists of 12 gastrointestinal infested cows.

The three main groups were used to study the levels of vitamin A, β-carotene, vitamin E, and some blood biochemical parameters under different disease conditions.

The obtained results showed that:

1-The effect of age on the levels of vitamin A and vitamin E:

- The lowest levels of vitamin A were recorded in calves less than 3 months of age, while the highest levels were observed in animals less than 6 months of age, then the levels were dropped again in animals between 6 – 2 years old, after that the vitamin A levels increased with age progression. β-carotene followed the same trend of vitamin A.
- Calves under 2 months of age had high levels of vitamin E, and vitamin E tends to be insignificantly increased with age progression in cattle.
- The activities of AST, ALT, serum blood levels of total protein, albumin, globulins, total lipids, and cholesterols were tend to be increased with advancing of the age.
- The AST activities and serum triglycerides levels were higher in young animals comparing with those in adults.

2-The effect of Sex:

- Bulls had insignificant lower vitamin A levels than that in cows, while the sex had variable effect on the levels of serum vitamin E, total lipids, cholesterols, triglycerides and creatinine.

3-The effect of reproduction cycle:

- The levels of serum vitamin A, β-carotene, vitamin E were differed according to the stages of reproduction cycle.
- The serum levels of total protein, globulins, total lipids, and triglycerides were increased with advancing of the pregnancy and decreased during lactation.

4-Animals under diseased conditions:

- Serum vitamin A levels were significantly decreased in bulls with corneal opacity, while β-carotene levels were insignificantly decreased comparing with those in control bulls. Also serum levels of vitamin E were increased but other serum biochemical parameters were insignificantly changed.
- In bulls with blindness due to vitamin A deficiency, the levels of vitamin A were highly significant decreased, β-carotene levels were decreased, and serum albumin and total lipids levels were significantly decreased comparing with those in control ones.
- Bulls with nervous manifestations due to vitamin A deficiency were had the lowest levels of serum vitamin A and β-carotene.
- Serum vitamin A levels in bulls with urinary bladder rupture were insignificantly changed while the β-carotene, creatinine, and SAP activities were highly significantly increased, but the serum total lipids, triglycerides, and cholesterols were decreased comparing with those in control ones.
- Bulls suffering from respiratory affections showed that serum β-carotene were significantly increased, serum AST activities, triglycerides were increased, while serum albumin, total lipids, and cholesterols were decreased comparing with those in control bulls.

- In bulls infested with fascioliasis, the serum vitamin A and β-carotene, albumin, total lipids, cholesterols, and triglycerides were lower, while serum AST activities and globulins levels were higher comparing with those in control bulls.
- Cows infected with brucellosis had higher levels of serum vitamin A, β-carotene, AST, ALT, SAP, total protein, albumin, globulins, total lipids, and cholesterols than those in control cows.
- Cows infected with tuberculosis had high levels of serum vitamin A, β-carotene, and vitamin E as they were fed mainly on green feed, but the serum activities of AST and SAP were higher than those in control cows.
- In group of mastitic cows, serum levels of vitamin A, β-carotene, and vitamin E were decrease while serum levels of total lipids and cholesterols were increased.
- In cattle infested with gastrointestinal parasites, serum levels of vitamin A and β-carotene were not significantly changed, serum levels of AST activities and vitamin E levels were higher, while serum albumin and total lipids levels were lower than those in control cows.